ABSTRACT

Residential property prices are in Albania, whether in terms of price equilibrium or price dynamics, remain underexplored. This research work set the objective of investigating the price behavior and trend shifts of residential properties, utilizing web-residing data from user-generated content. In essence, the paper analyses the online price listings of residential properties for sale in all geographic locations of the country, by estimating a monthly index of these prices in the capital, and comparing its dynamics to the same measurements based on countrywide data and data categorized by geographical area, namely, coastal and inland. The estimated index explores a time horizon of 5 ½ years and shows an overall upward trend of the prices, with an exponential inclination, particularly after the consecutive economic shocks Albania underwent in 2019 and 2020.

INTRODUCTION AND BACKGROUND SUMMARY

Current times' most valuable commodity is information. It allows for better strategizing and sharper courses of action in every field of human activity. When obtained information is relevant, ample, and recurrent in the domain of economic and business conduct, it ensures qualitative research followed by apt economic policies and decision-making. The above has always been the case, however it appears to be much more pronounced now in the era of online communication, interactivity, and big data analyses.

Even though the monitoring and examination of residential housing price dynamics is a key task for policy makers and researchers, periodic information on this market is rather limited in Albania. The only official primary data source on this market is Bank of Albania's "Real Estate Market" semiannual questionnaire. However, the data gathered via this questionnaire are not compiled to be made officially available in tabular form for public use. The findings are simply summarized and presented in a semiannual synopsis publication, as well as in the semiannual report of the Bank's Financial Stability Department. Several real estate agencies operating in the country gather residential housing data for their own ends, but neither the Institute of Statistics nor any other governmental institutions have – as of currently – been involved with tracking, compiling and aggregating these data for official statistics.

Under these conditions it becomes necessary to seek alternate channels of housing market data accessibility – one such channel being online housing advertisements. This channel enables users (house owners in this case) to list their residential properties on various Internet websites, providing all associated details such as price, surface in meters squared, architectural setup, etc. These user-provided details have the potential to be utilized to construct _____ micro datasets. User-generated content (UGC) constitutes only one portion of the immense volume of Internet-found information better known as "big data", but it leads to tremendous opportunities in the field of research. With specific regard to the residential housing market, UGC's data entry

frequency, granularity and detailed descriptions can help to compile datasets that allow for sound structural econometric analyses and real time price dynamics monitoring.

This research paper makes use of residential housing UGC to come up a monthly index of the residential property price in Albania's capital, as well as the coast and inland areas of the country. The main motivation behind this project is to inquire into the trends of Albania's residential housing market, which are otherwise difficult to track and estimate. Estimating this monthly index is this research paper's objective, and it is intended to be achieved by: [I] utilizing Web-listed prices for residential property sales in all counties of Albania, and; [II] employing big data congregation and organization tools – i.e. Python, MS Excel and MS Office's Power toolset – to identify, gather, clean, organize, and calculate this Internet-residing data, so as to estimate the price index we aim.

The remainder of the research paper is structured as follows. The second section contains the literature review. In it we recognize the preceding literature, either on the methodology or the economic topic itself. The third section covers the research data, the methodology, and describes the tools used to achieve data congregation for the purposes of this research. The fourth sections details the research results, and the last section presents its concluding remarks. The bibliography, the econometric output for the results, and the software code used for the methodology procedures are given at the end of the paper.

LITERATURE REVIEW

Residential property prices are typically characterized by wide-ranging variations, which are present because of a multitude of socioeconomic and contingent determinants. Among the socioeconomic determinants, the body of literature on this subject lists: immigration[1] (Degen & Fischer, 2017), housing supply, construction costs, opportunity cost of capital, labor force, population (Droes & van de Minne, 2017), and informal economic practices[2] (Savona & Riccardi, 2015). Contingent determinants comprise factors mainly related to the attributes and location of the residential property itself[3].

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[1] In the short run, emigrants leaving the capital tend to sell their properties at prices marginally lower than market equilibrium, while domestic immigrants arranging to reside in the capital tend to buy properties at prices marginally higher than market equilibrium. Domestic immigration from provincial and rural areas to the capital Tirana, has been very prevalent over many years in Albania.

[2] A 2015 European Commission report concluded that – among others – the sectors where money laundering was most prevalent, and illicit funds were used the most, included: real estate, construction, and the hospitality sector (bars, restaurants and hotels). Such illicit economic activities are typically driven by incentives other than profit maximization and can cause disruptive effects on the economy, primarily through "price bubbles" and the distortion of price equilibria – whereby supply-offered price level and demand-requested price level don't align.

[3] Such factors may include: building type and material, building amortization, property location, floor positioning, climate, building orientation, neighborhood placement, nearby facilities, property surface area, property architectural arrangement, intent of property use, seller disposition, etc.

The specific taxation, to which residential property transactions in Albania are subject and property owners (sellers) are obliged to cover, is also to be noted. This tax “on the transfer of the real estate ownership right” equals 15% of the profit made on the property sale. Seller’s profit is considered the surplus of the sale value over the acquisition value – each of which must be detailed in the sale and acquisition contracts held by the party selling the property. No fixed formula is in place to calculate the seller’s profit; this profit is assessed on a case-by-case basis because, in each case of a residential property sale, the sale value is compared to a benchmark value – called “the reference price”. The reference price is based on the geographical whereabouts of the property to be sold, and determined by Albania’s Ministry of Finances. If the sale value is higher than the government’s benchmark value for that particular geographic location, the sale value is used to calculate the seller’s profit; else, the seller’s profit is derived by disregarding the sale value and factoring in the benchmark value instead (Ministry of Finances & Ministry of Justice, 2018). In each of these cases, the taxed amount may influence the final property price settlement between the seller and the buyer. On top of the above, a considerable share of residential property owners indenting to sell their property purchase the services of real estate agencies in order to advertise the sale to as many potential buyers as possible, and these services may exert an additional influence on the final price settlement.

This research work attempts to estimate an index of Albania’s residential housing per-meter-square price using the hedonic price analysis and focusing on the contingent determinants. Because of the challenge to derive fitting quantifications of the socioeconomic determinants on an observational basis, only contingent determinants are taken into consideration. The quantifications are more attainable for the contingent determinants because a considerable share of these are detailed in the UGC online entries for each price listing (observation), which ensures minimal missing data.

Applying the hedonic price analysis – using contingent determinants – to index capital asset prices traces back to as early as the 30s, with Court’s (1939) pivotal paper on hedonic price indices of automobiles. The term “hedonic” was coined by Court himself to describe the relative importance weighting of various components of the asset whose usefulness and desirability is aimed to be estimated in monetary terms. Hedonic price analysis is fundamentally a micro-econometric analysis (Goodman, 1998), in that its purpose is to aggregate a price indicator prevalent in all available observations. Court’s indexing technique went neglected and undervalued for more than two decades, before gaining considerable regard in the 60s, through research published by Griliches, Bailey, Muth, Nourse and others. This is because – as Griliches (1961) emphasizes – the 60s were rather resourceful times in terms of data drive, computing power, econometric training and sophistication, and general interest in this range of topics.

With specific regard to the case of Albania, the determinants of residential property prices are comprehensively researched in the body of existing

literature. Kristo and Bollano (2012) laid the methodological foundations of house price indexing using hedonic regression techniques through the use of contingent determinants such as surface area, property furnishing, geographical location, and timespan of use. Agalliu (2013) offered a housing price index through a simplified version of the Sale Price Appraisal Ratio (SPAR) approach, utilizing client questionnaire microdata of commercial banks operating in Albania. Rebi (2014) and Suljoti (2017) used VECM frameworks instead, incorporating economic regressors such as mortgage credit, real GDP, mortgage credit to GDP ratio, treasury bonds yield, interest rate, Lek/Euro exchange rate, etc., to analyze their endogenous long-term relationship to the housing price index. Lleshaj and Korbi (2019), and Marku et al. (2020) sought similar approaches, relying on vector autoregression specifications to study the relationship of the housing price index to regressors such as construction costs, consumer prices, unemployment, remittances, Lek/Euro exchange rate, national mortgage loans, etc.

From the methodological framework standpoint, the study resembling, and laying a solid set of procedural foundations for, our research work is Kristo and Bollano's (2012) paper "House price index – methodology and use". It exceptionally pinpoints the theoretical and applicable aspects of the methodology, setting in order the procedures of estimating an index based on hedonic prices specific to Albanian data. A further valuable recourse followed to apply our research's methodology is NasserEddine's (2017) paper on hedonic models for heterogeneous assets returns, in which the author thoroughly outlines the variable setting, control and dummy variables, the econometric specifications, and the techniques of obtaining and comparing various price indices.

RESEARCH LIMITAIONS

Due to data obtainability impediments, because transaction prices of residential properties at the time of the actual sale are not publicly available in Albania, this research work is based on online price listings made available by the seller himself (or parties representing the seller) instead. The results, therefore, instead of being indices of sale prices, are indices of what sellers perceive as appropriate prices for their properties for sale. These seller price perceptions may or may not in turn materialize, meaning, they may result lower, higher, or identical to the true prices at the time of the actual sale. While online price listings are not the ideal economic measure, they are rather accurate markers of where unobserved residential property prices land at the time of sale, so indices based on these listings bring value to economic research.

Another limitation of this research is data proportionality with respect to the locations where it originates from. The sample is not picked by the researcher but determined by the amount of user-generated content available on the website, thus may not best represent all locations of the residential property

sales population. In this case, the best we can accomplish is to work with what we have at hand.

DATA AND METHODOLOGICAL FRAMEWORK

This research project's data is sourced from njoftime.com, which to date is Albania's largest UGC transactions information website. The sample size consists of 30.467 observations (residential property sale ad entries) published over a time span of 5 and a half years: 66 months from January 2017 to June 2022. The sample is refined to solely include apartments of residential buildings located in urban and semi-urban areas, as well as single and multi storey residential houses and villas located in rural and urban areas of the country. The study omits sale ads of premises used to conduct activities unrelated to residential accommodation, such as business, social, industrial and agricultural activities. Sale ads of residential properties sold in conjunction with sizable areas of land or other natural assets are also omitted.

The available data is divided into 3 groups: [I] capital for all entries of advertised sales in Tirana; [II] coast for all entries of advertised sales in Albania's coastal cities, towns and rural areas, and; [III] inland for all entries of advertised sales in Albania's inner cities, towns and rural areas. The attribute of the sample is such that 86% of the ads are for property sales in Tirana, 9% are for property sales in coast areas, and only 5% are for sales in inland areas. This shows that the most substantial drive of the country's price growth index occurs with residential property sales in Tirana. The index itself can therefore be decomposed into 3 sub-indices for the aforementioned groups. Its time frequency is set to be monthly since there is observational abundance to support this frequency; there are approximately 557 observations per month.

The tools used for the electronic data gathering procedure include the Python framework and programing language in conjunction with its sub-component Scrapy – a website data scraping engine. The data gathering procedure consists in accessing the HTML structure of the website njoftime.com through the Python framework and Python code, then employing Scrapy in order to identify, collect and save locally all the needed bits of information for each sale ad entry in the residential property sales category of the website. An example of the Python code used in the data gathering procedure is found in Figure 1.

The procedure uses CSS or XPATH selectors of the HTML structure in order to capture and save the needed bits of information from the website. As shown in Figure 1, this example code instructs the program to collect the date, the lister and the header of a sale ad entry, and store it as raw information in a data interchange file. This step is then repeated in a loop fashion for all entries of all specified pages of the website, as determined by the researcher, ending up with a dataset consisting of 3 columns of raw information where each dataset row corresponds to each entry.

Once raw data are collected and saved, MS Excel is used to access the data file, and Excel formulas and Power Query are applied to filter, clean, append, and organize them in tabular form, with no outliers, no missing values, and

specified variables. The continuous and dichotomous variables, and the time dummies are all created by extracting the necessary information from raw data. Thereafter Base SAS software is used for the econometric output of the hedonic regressions.

Regarding the econometric context, it can be outlined that the foundational work of Court (1939) and Griliches (1961) accentuated the advantage of “an index of hedonic content” in yielding valid

Figure 1: Python code example for Scrapy

```
import scrapy


class shtepi_try2Spider(scrapy.Spider):
    name = 'shtepi_try2'
    allowed_domains = ['njoftime.com']
    start_urls = ['https://www.njoftime.com/forumdisplay.php?4-Shtepi-ne-shitje/page{}
    download_delay = 2

    def parse(self, response):
        for box in response.css('div.inner'):
            yield {
                'date': box.css('dd::text').get().replace(', ',''),
                'lister': box.css('dd div a strong::text').get(),
                'header': box.css('.title::text').get(),
            }

    def parse(self, response):
        for link in response.css('h3.threadtitle a::attr(href)'):
            yield response.follow(link.get(), callback=self.parse_info)

    def parse_info(self, response):

    def start_requests(self):
        for i in range (1, 1305):
            yield scrapy.Request(self.start_urls[0].format(str(i)), callback=self.parse)
```

comparisons in the face of changing specifications of studied commodities. They propose a multiple regression framework using a price measure as the regressor and a set of shared qualities as independent variables (where time periods are also included among the independent variables):

$$p_t = \alpha + f(x_1, x_2 \ldots x_n) + d(t_1, t_2 \ldots t_m) + \varepsilon_t \quad (1)$$

where p is the price measure, f(x) is the component of shared qualities of the studied commodity, d(t) is the time trend component, and ε is a white noise, zero mean, constant variance residual.

In order to correctly interpret time-based growth, Griliches considers using a semi-logarithmic specification, relating a logarithmic price regressor to the absolute values of the commodity contingent determinants. We use Kristo and Bollano's (2012) and NasserEddine's (2017) approach – an approach inspired by Griliches theoretical foundations – employing a semi-logarithmic specification and obtaining the price index by augmenting the regression with time period dummies, as below:

$$\text{Ln } P_{it} = \alpha + \sum_{q=1}^{n} \beta_q X_{iq} + \sum_{t=1}^{m} \delta_t D_{it} + \varepsilon_{it} \quad (2)$$

where: regressand P_{it} is price of property i at time period t. The first component of the specification's right-hand side X_{iq} is the estimated value of the quality q of property i, the value of quality q being always set to 1 if property i possesses that specific quality, and 0 if property i is void of it. In our case, X includes 2 continuous variables (*meters squared, square root of meters squared*) and the rest (*private edifice*, *furnished*, *new property, studio apartment*) are dichotomous. The second component D_{it} is a set of 66 month dummies that take the value of 1 if the property i's price is listed online within the specified month, and 0 otherwise. ε_{it} is the white noise residual of property i at time period t.

The growth index itself is computed by taking the natural antilogarithms of the month dummies' coefficients, as below:

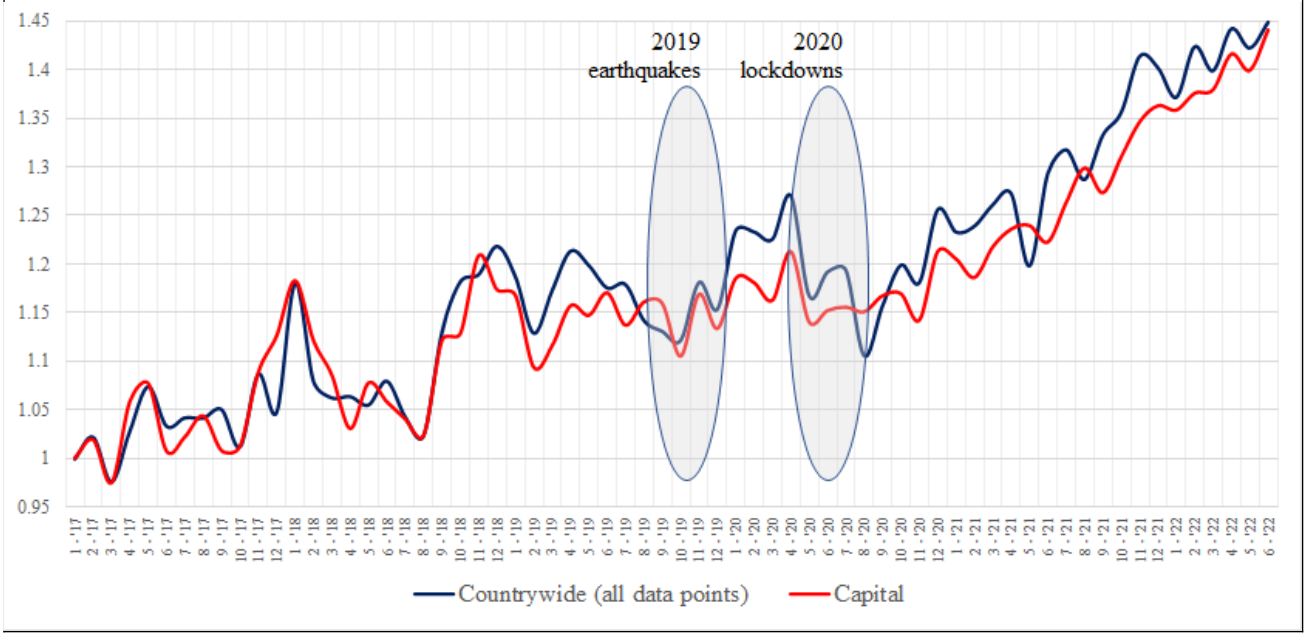
$$I_t \text{ ¿ } e^{\delta_t} \quad (3)$$

where e is Euler's constant and the calculated I_t-s of the month dummies' coefficients constitute the 66-period index series of the monthly price growth from Jan. 2017 to Jun. 2022.

RESULTS

Figure 2 plots the growth indices for: [I] countrywide data (dark blue), and [II] the capital (red). Although econometric tests reveal that these indices exhibit some weak traces of seasonality, they are left unadjusted for further study purposes. They both show a consistent and steady growth of the residential property Web-listed prices in Euros for the investigated 5 ½-year timespan. Compared to Jan. 2017 (the beginning of the series and the reference month), by the end of the investigated timespan, prices in the capital and countrywide have increased by about 44%. Hedonic regression results for these two indices are found in Annex 1.

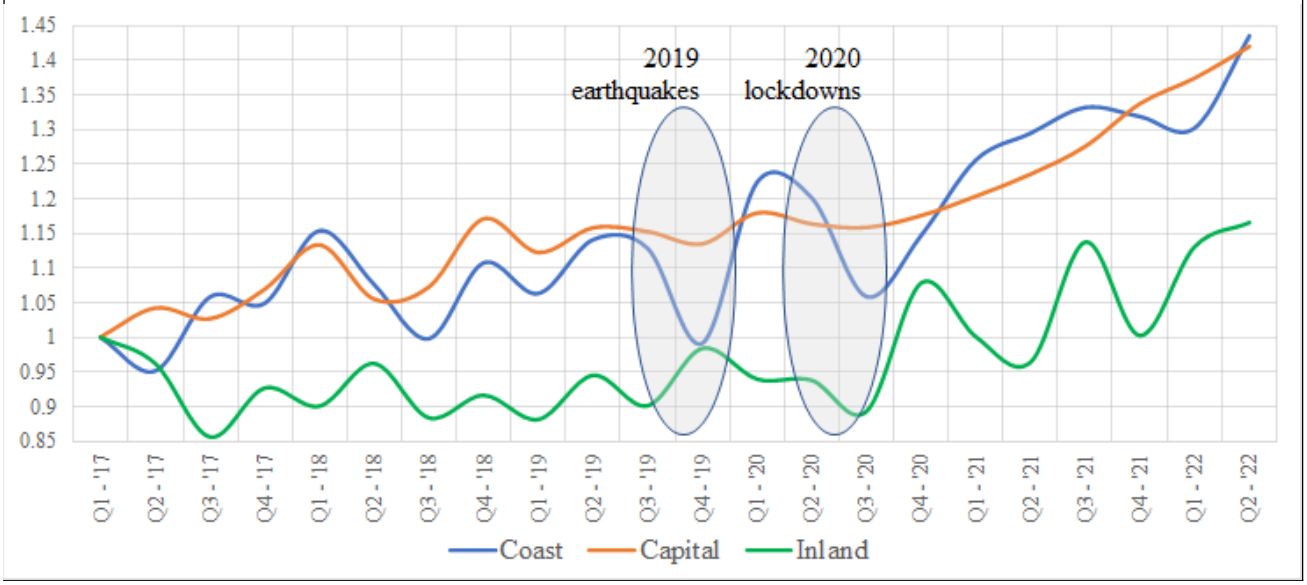
Figure 2: Albania's residential property price indices (monthly frequency)



The rough trajectories of these indices appear to exhibit slight exponential traits. They were anticipated at the outset, as they largely resemble house price Fischer indices for Albania and its capital that Bank of Albania's Financial Stability Department has published in its "Real Estate Market" questionnaire results. In contrast to the Fischer indices, this research's hedonic indices accurately capture the volatilities of the main economic shocks that the Albanian economy weathered this last quinquennium,

namely: the devastating earthquakes of the later half of 2019, and the 2020 COVID-19 lockdowns. As the graph shows, prior to the shocks, the prices had a gradual growing trend of about 7 p.p. per year. After the shocks took place (Sep. 2020 onward) the prices proceeded growing at a clip of about 16 p.p. per year: more than twice as steep. Even though data availability discontinues at Jun. 2022, we can convincingly anticipate that because of Euro area inflation, largely driven by international conflict and fossil fuel scarcity after the first quarter of 2022, the latter trend of residential property prices will be prevalent and accelerating in the short to medium terms.

Figure 3: Albania's residential property price indices (data decomposed by geographical area, quarterly frequency)



In order to acquire a better understanding of the price growth dynamics in different geographical areas of the country, we reapply specification (2) for each of the 3 groups of data: coast, capital and inland. In order to compensate for observational shortages that arise in the case of coast and inland areas, this time we use quarterly dummies, thereby increasing threefold the observations per period mean and decreasing the number of time dummies to 22. Figure 3 plots the price growth indices for: [I] coast locations (blue), [II] the capital (orange), and [III] inland locations (green). Hedonic regression results for these three indices are found in Annex 2.

The price dynamics for decomposed data reveal a few particulars. First, the variabilities of coast and capital indices seem rather synchronized; they show nearly the same upward trend and growth scale. The inland index, on the other hand, shows negative growth during the first 4 years of the observed timespan; its trend shifts upwards only during the last 6 quarters. Thus, the data confirm that residential property prices in inland areas of the country have been on the decline from the start of 2017 to the end of 2020. This is not true for prices in coastal areas and the capital; the latter have experienced growth for the whole 5 ½ year timespan under observation.

Second, the growth of residential property prices in the capital seems rather stable and unaffected by the two main economic shocks afflicting the Albanian economy in 2019 and 2020. The price growth displays dips during the shocks, but they are barely visible. On the other hand, price growth in coastal areas experiences noticeable declines, each reaching 16 to 18 p.p. within two quarters. While price growth in inland areas remains in negative growth territory for the entire time range of the shocks.

Third, right after the COVID-19 lockdowns residential property prices exhibit rapid growth countrywide, regardless of the geographical area. The price growth partials since this shock are: 26 p.p. increase for the capital, 21 p.p.

increase for coastal areas, and 12 p.p. increase for inland areas. In the case of prices in the country's inland areas, this is the only time period exhibiting growth.

CONCLUDING REMARKS

To recap, this research was conducted using microdata gathered electronically by means of big data congregation tools such as the Python framework and a set of web scrapping tools and procedures. The objective from the outset was to estimate a monthly index of the residential property prices in Albania's capital. The data was sourced from njoftime.com, Albania's largest UGC transactions information website, and contained 30.467 observations (price listings) spanning over a period of 5 ½ years, from Jan. 2017 to Jun. 2022. The raw data collection phase was followed by a laborious phase of identifying, cleaning, sorting, organizing, and calculating the collected information into tabular form, with specified variables, no outliers and no missing data. This was accomplished through MS Excel and its subcomponent Power Query. The last phase was that of using a hedonic OLS specification based on Court (1939) and Griliches (1961) theoretical foundations, and on Kristo and Bollano's (2012) methodological approach, to obtain the monthly and quarterly price growth indices presented in this analysis. The main findings are detailed below:

- By Jun. 2022, listed prices of residential properties in the capital and countrywide have increased by about 44% compared to the first month of the investigated period, which translates to a mean growth of about 7 to 8 p.p. per year. The index's rough trajectory appears to exhibit exponential traits; this was expected, as it closely mirrors the Fischer house price index published by Bank of Albania.
- The index accurately captures the price growth declines of during the two main economic shocks weathered by the domestic economy in 2019 and 2020. The countrywide index decomposition by geographical area shows that these shock declines of the prices happened mainly in coastal and inland areas.
- The prices show positive growth both before and after the 2019 and 2020 economic shocks, but growth acceleration after the shocks appears to be more than twice as steep. We can reasonably assume the continuation of residential property prices growth and its exponential pattern, if inflation in general and the prices of building and raw materials in particular continue to rise due to a prevalence of the international conflict and fossil fuel scarcity in the Euro area.
- Decomposed data regression analyses show that, in contrast to coastal areas and the capital where residential property prices have been on a steady rising trend, prices in inland areas have been on the decline for the most part of the investigated period. Only after the COVID-19 lockdowns prices in inland areas start to follow a rising trend.
- The negative effects of the 2019 and 2020 economic shocks were virtually unobserved in the prices' trajectory of residential properties of

the capital. This shows that house prices in the capital are resilient and appear inclined to maintain their upward trend regardless of the local or outside shocks affecting the country's economy.

One of the purposes of this research paper was to demonstrate that, if congregated and synthetized appropriately, even when pertaining to a small country such as Albania, big data and user-generated content in particular, can be utilized in the context of economic analyses and research. The abundance of web-residing data, the rapid rise of computing power and the availability of pertinent software equip researchers with a new and exciting set of tools to advance their professional goals. To the best of our knowledge, it is the first time that the methodology presented in this paper is used in the context economic research on Albania. Let this research effort serve as a lead for more research initiatives to be conducted in the future employing this methodological framework.

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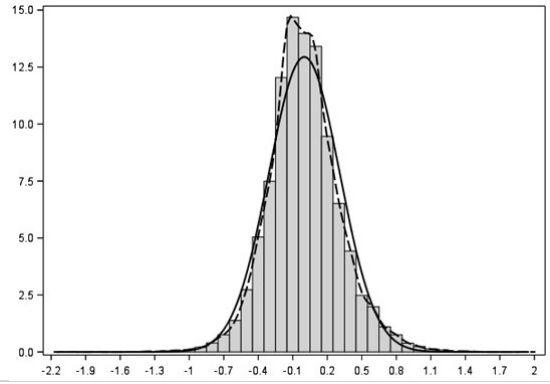
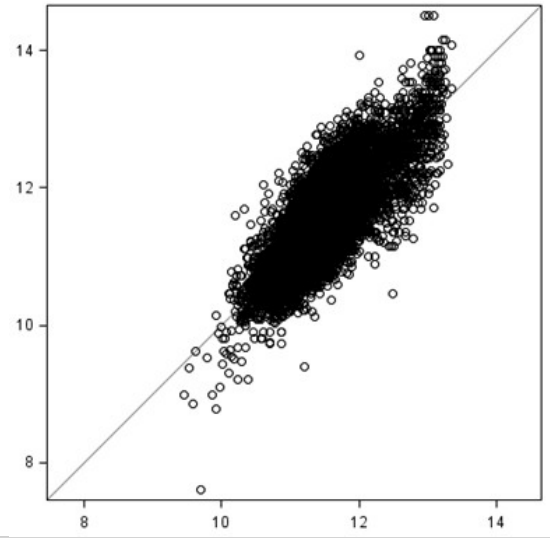
Regression capital (monthly):

Distribution of residuals for LogPrice

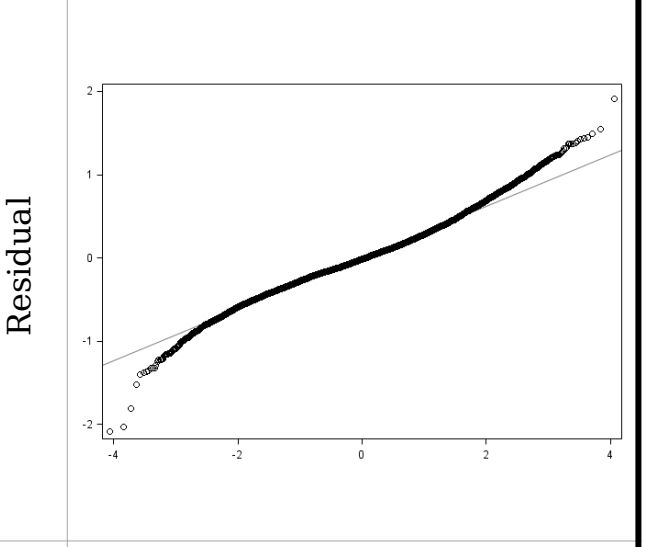


Number of Observations:	25814
Degrees of freedom:	71
F Value:	666.46
Pr > F:	<.0001
R-Square:	0.6477
Adj R-Sq:	0.6467

Observed by predicted for LogPrice

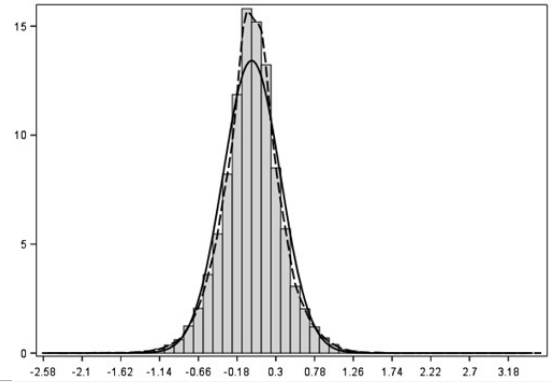


Q-Q plot of residuals for LogPrice



Regression countrywide (monthly):

Distribution of residuals for LogPrice



Number of Observations:	30467
Degrees of freedom:	71
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Pr > F:	<.0001
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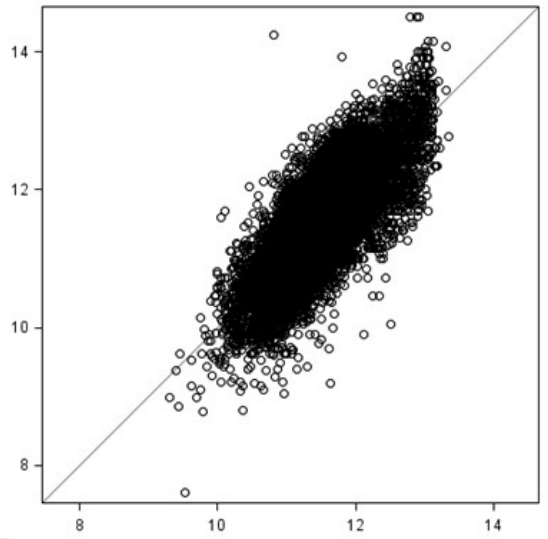
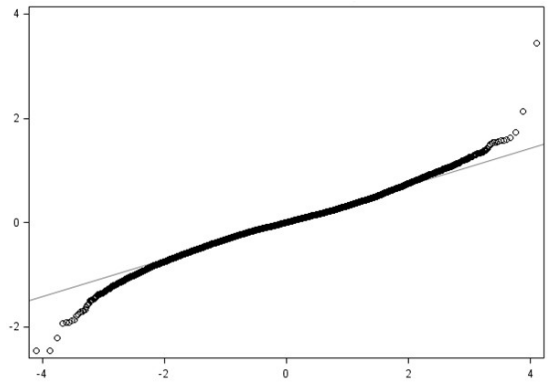
Adj R-Sq:	0.6128

Observed by predicted for LogPrice

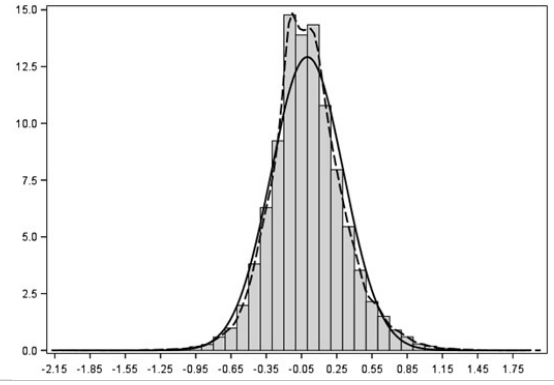


Q-Q plot of residuals for LogPrice



Regression capital (quarterly frequency):

Distribution of residuals for LogPrice



Number of Observations:	25814
Degrees of freedom:	27
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Pr > F:	<.0001
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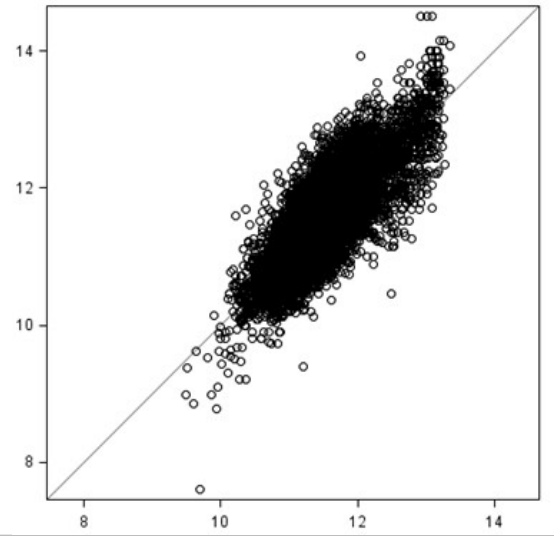
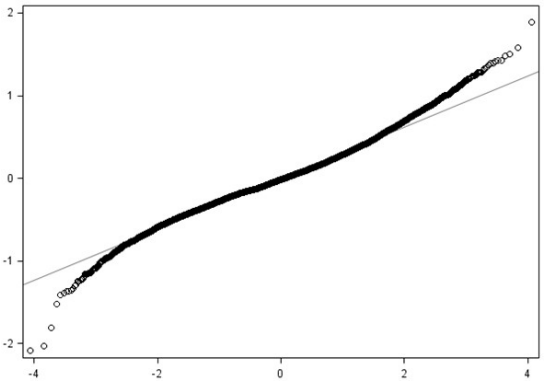
Adj R-Sq:	0.6462

Observed by predicted for LogPrice

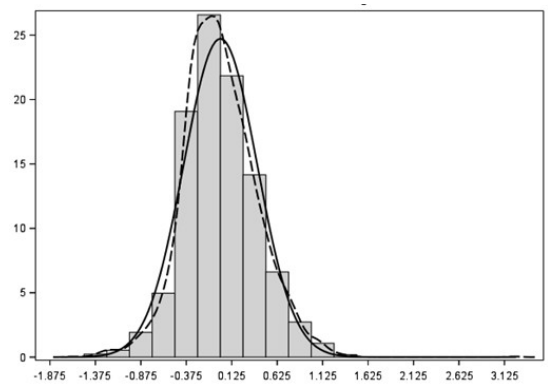


Q-Q plot of residuals for LogPrice



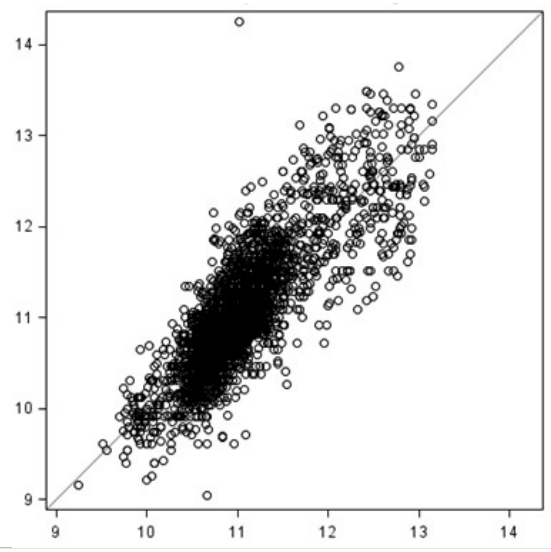
Regression coast (quarterly frequency):

Distribution of residuals for LogPrice

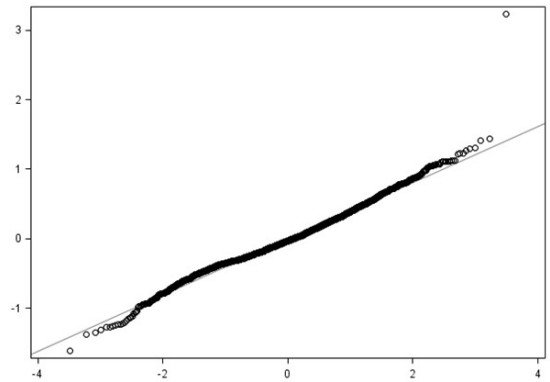


Number of Observations:	2600
Degrees of freedom:	27
F Value:	211.51
Pr > F:	<.0001
R-Square:	0.6895
Adj R-Sq:	0.6862

Observed by predicted for LogPrice

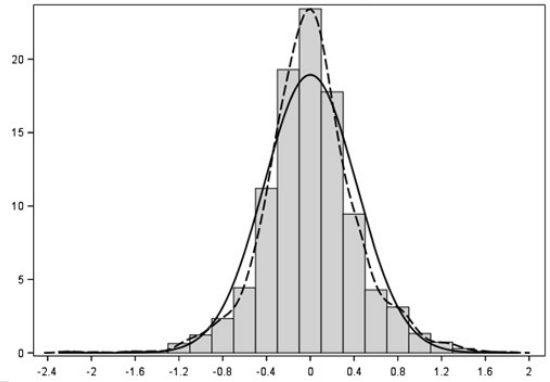


Q-Q plot of residuals for LogPrice



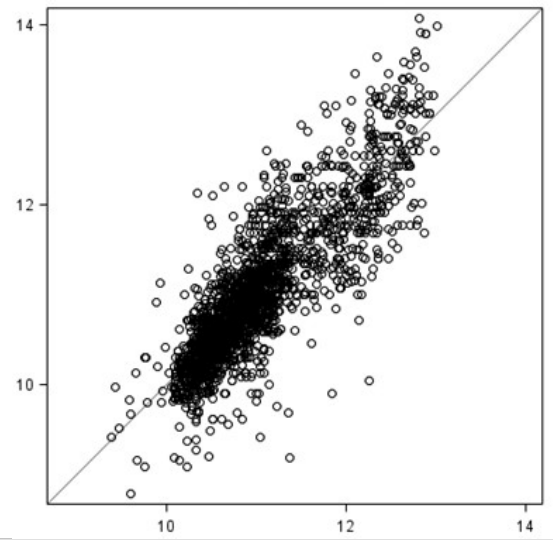
Regression inland (quarterly frequency):

Distribution of residuals for LogPrice

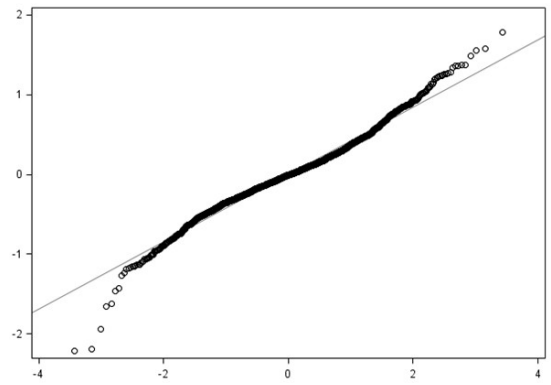


Number of Observations:	2053
Degrees of freedom:	27
F Value:	192.51
Pr > F:	<.0001
R-Square:	0.7196
Adj R-Sq:	0.7159

Observed by predicted for LogPrice



Q-Q plot of residuals for LogPrice



VARIABLE:	Capital (monthly)		Countrywide (monthly)		Capital (quarterly)		Coast (quarterly)		Inland (quarterly)	
Intercept	8.49467	***	8.37292	***	8.49029	***	8.33024	***	8.23669	***
Surface	-0.00620	***	-0.00629	***	-0.00622	***	-0.00564	***	-0.00558	***
SqRtSurface	0.33470	***	0.34005	***	0.33521	***	0.31405	***	0.31897	***
PrivateEdifice	-0.09560	***	-0.22173	***	-0.09435	***	0.09645	***	0.02410	
Furnished	0.05565	***	0.04879	***	0.05614	***	0.04175	**	0.08368	***
NewProperty	-0.00190		0.02291	***	-0.00174		-0.01957		0.03214	
StudioApartment	-0.04422	**	-0.13961	***	-0.04344	**	-0.27705	***	-0.31379	***
y2017M02	0.01947		0.02393		-		-		-	
y2017M03	-0.02525		-0.01980		-		-		-	
y2017M04	0.05562		0.02826		-		-		-	
y2017M05	0.07270	**	0.07048	**	-		-		-	
y2017M06	0.00454		0.02801		-		-		-	
y2017M07	0.02205		0.04473		-		-		-	
y2017M08	0.04273		0.04271		-		-		-	
y2017M09	0.00420		0.04556		-		-		-	
y2017M10	0.01076		0.01162		-		-		-	
y2017M11	0.08909	***	0.08518	**	-		-		-	
y2017M12	0.11748	***	0.04641		-		-		-	
y2018M01	0.16835	***	0.16670	***	-		-		-	
y2018M02	0.11245	***	0.07435	**	-		-		-	
y2018M03	0.09043	***	0.06299	*	-		-		-	
y2018M04	0.02678		0.05823	*	-		-		-	
y2018M05	0.07504	**	0.05595	*	-		-		-	
y2018M06	0.05443		0.07472	**	-		-		-	
y2018M07	0.03501		0.03743		-		-		-	
y2018M08	0.02190		0.02364		-		-		-	
y2018M09	0.11062	***	0.11723	***	-		-		-	
y2018M10	0.12056	***	0.16673	***	-		-		-	
y2018M11	0.18628	***	0.17030	***	-		-		-	
y2018M12	0.15492	***	0.19274	***	-		-		-	
y2019M01	0.15585	***	0.17574	***	-		-		-	
y2019M02	0.08534	***	0.11649	***	-		-		-	
y2019M03	0.10712	***	0.15644	***	-		-		-	
y2019M04	0.14376	***	0.19160	***	-		-		-	
y2019M05	0.13672	***	0.18030	***	-		-		-	
y2019M06	0.15435	***	0.15866	***	-		-		-	
y2019M07	0.12441	***	0.16336	***	-		-		-	
y2019M08	0.14728	***	0.13148	***	-		-		-	
y2019M09	0.14257	***	0.11596	***	-		-		-	
y2019M10	0.10014	***	0.11524	***	-		-		-	
y2019M11	0.15219	***	0.16264	***	-		-		-	
y2019M12	0.12253	***	0.14004	***	-		-		-	
y2020M01	0.16902	***	0.21011	***	-		-		-	
y2020M02	0.16382	***	0.21973	***	-		-		-	
y2020M03	0.15042	***	0.20322	***	-		-		-	
y2020M04	0.19094	***	0.23876	***	-		-		-	
y2020M05	0.12949	***	0.15109	***	-		-		-	
y2020M06	0.13993	***	0.17525	***	-		-		-	
y2020M07	0.14432	***	0.17599	***	-		-		-	
y2020M08	0.13827	***	0.09741	***	-		-		-	
y2020M09	0.15558	***	0.14449	***	-		-		-	
y2020M10	0.15346	***	0.17654	***	-		-		-	
y2020M11	0.12983	***	0.16255	***	-		-		-	
y2020M12	0.18979	***	0.22513	***	-		-		-	
y2021M01	0.18617	***	0.20931	***	-		-		-	
y2021M02	0.16860	***	0.21134	***	-		-		-	
y2021M03	0.19278	***	0.22679	***	-		-		-	
y2021M04	0.20754	***	0.23567	***	-		-		-	
y2021M05	0.21123	***	0.17703	***	-		-		-	
y2021M06	0.19501	***	0.24847	***	-		-		-	
y2021M07	0.23143	***	0.27233	***	-		-		-	
y2021M08	0.25910	***	0.24975	***	-		-		-	
y2021M09	0.23982	***	0.28510	***	-		-		-	
y2021M10	0.26802	***	0.30149	***	-		-		-	
y2021M11	0.29408	***	0.34273	***	-		-		-	
y2021M12	0.30673	***	0.33362	***	-		-		-	
y2022M01	0.30208	***	0.31022	***	-		-		-	
y2022M02	0.31593	***	0.35044	***	-		-		-	
y2022M03	0.31745	***	0.33039	***	-		-		-	
y2022M04	0.34353	***	0.36089	***	-		-		-	
y2022M05	0.33371	***	0.34978	***	-		-		-	
y2022M06	0.36253	***	0.36770	***	-		-		-	
y2017Q2	-		-		0.03914	*	-0.06604		-0.04547	
y2017Q3	-		-		0.02527		0.06269		-0.16198	**
y2017Q4	-		-		0.06801	***	0.04140		-0.07977	
y2018Q1	-		-		0.12754	***	0.13432	*	-0.11258	*
y2018Q2	-		-		0.05157	***	0.06812		-0.04569	
y2018Q3	-		-		0.06643	***	-0.01070		-0.12941	
y2018Q4	-		-		0.15502	***	0.09671		-0.09734	
y2019Q1	-		-		0.11314	***	0.06444		-0.13368	*
y2019Q2	-		-		0.14500	***	0.11358	*	-0.06275	
y2019Q3	-		-		0.13835	***	0.11585	*	-0.10532	
y2019Q4	-		-		0.12455	***	-0.01352		-0.02104	
y2020Q1	-		-		0.16402	***	0.27475	***	-0.07194	
y2020Q2	-		-		0.14977	***	0.17220	***	-0.04061	
y2020Q3	-		-		0.14673	***	0.04326		-0.12675	*
y2020Q4	-		-		0.15885	***	0.10499	*	0.06924	
y2021Q1	-		-		0.18330	***	0.20848	***	-0.01152	
y2021Q2	-		-		0.20715	***	0.24386	***	-0.04426	
y2021Q3	-		-		0.24156	***	0.27977	***	0.12104	*
y2021Q4	-		-		0.28822	***	0.27492	***	-0.01150	
y2022Q1	-		-		0.31441	***	0.25417	***	0.11073	*
y2022Q2	-		-		0.34781	***	0.35472	***	0.14483	**

MODELI PER CMIMET NE TIRANE (MUJORE)

The REG Procedure

Model: MODEL1

Dependent Variable: LogPrice LogPrice

Number of Observations Read	25814
Number of Observations Used	25814

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	71	4504.75964	63.44732	666.46	<.0001
Error	25742	2450.65310	0.09520		
Corrected Total	25813	6955.41274			

Root MSE	0.30855	**R-Square**	0.6477
Dependent Mean	11.38730	**Adj R-Sq**	0.6467
Coeff Var	2.70956		

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Intercept	Intercept	**1**	8.49467	0.03420	248.40	<.0001
Surface0I	Surface0I	**1**	-0.00620	0.00013702	-45.23	<.0001
SqRtSurface	SqRtSurface	**1**	0.33470	0.00358	93.62	<.0001
ObjektPrivat	ObjektPrivat	**1**	-0.09560	0.01397	-6.84	<.0001
Furnished	Furnished	**1**	0.05565	0.00416	13.38	<.0001
NewProperty	NewProperty	**1**	-0.00190	0.00408	-0.47	0.6415
StudioApartment	StudioApartment	**1**	-0.04422	0.01916	-2.31	0.0210
y2017M02	y2017M02	**1**	0.01947	0.03799	0.51	0.6083
y2017M03	y2017M03	**1**	-0.02525	0.03878	-0.65	0.5151
y2017M04	y2017M04	**1**	0.05562	0.03682	1.51	0.1309
y2017M05	y2017M05	**1**	0.07270	0.03462	2.10	0.0358
y2017M06	y2017M06	**1**	0.00454	0.03215	0.14	0.8877
y2017M07	y2017M07	**1**	0.02205	0.03121	0.71	0.4800

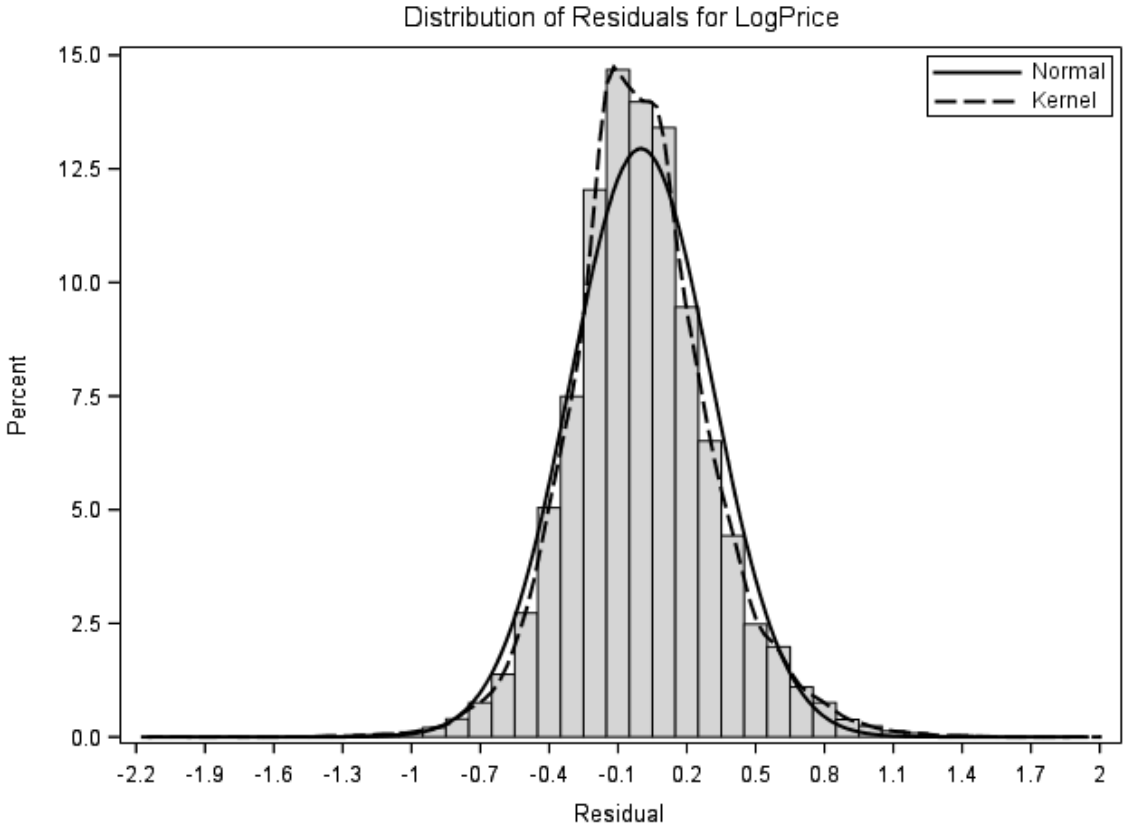
Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2017M08	y2017M08	**1**	0.04273	0.03265	1.31	0.1907
y2017M09	y2017M09	**1**	0.00420	0.03383	0.12	0.9012
y2017M10	y2017M10	**1**	0.01076	0.03534	0.30	0.7609
y2017M11	y2017M11	**1**	0.08909	0.03360	2.65	0.0080
y2017M12	y2017M12	**1**	0.11748	0.04163	2.82	0.0048
y2018M01	y2018M01	**1**	0.16835	0.03341	5.04	<.0001
y2018M02	y2018M02	**1**	0.11245	0.03591	3.13	0.0017
y2018M03	y2018M03	**1**	0.09043	0.03413	2.65	0.0081
y2018M04	y2018M04	**1**	0.02678	0.03223	0.83	0.4060
y2018M05	y2018M05	**1**	0.07504	0.03341	2.25	0.0247
y2018M06	y2018M06	**1**	0.05443	0.03431	1.59	0.1126
y2018M07	y2018M07	**1**	0.03501	0.03737	0.94	0.3489
y2018M08	y2018M08	**1**	0.02190	0.03614	0.61	0.5445

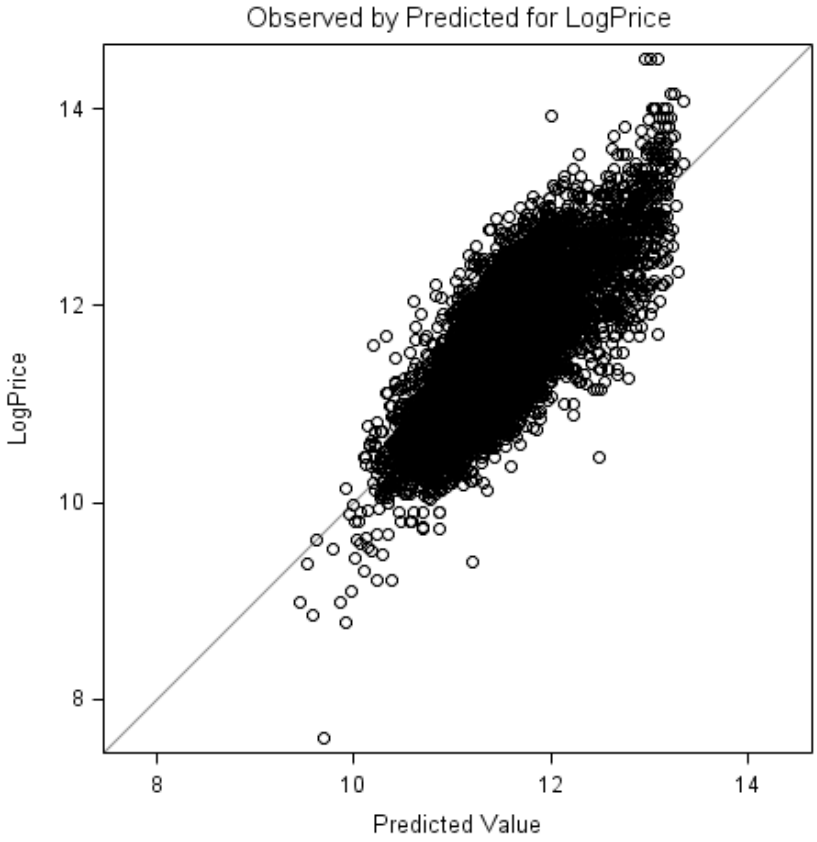
Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2018M09	y2018M09	**1**	0.11062	0.03298	3.35	0.0008
y2018M10	y2018M10	**1**	0.12056	0.03202	3.76	0.0002
y2018M11	y2018M11	**1**	0.18628	0.03211	5.80	<.0001
y2018M12	y2018M12	**1**	0.15492	0.03204	4.83	<.0001
y2019M01	y2019M01	**1**	0.15585	0.03285	4.74	<.0001
y2019M02	y2019M02	**1**	0.08534	0.03109	2.74	0.0061
y2019M03	y2019M03	**1**	0.10712	0.03078	3.48	0.0005
y2019M04	y2019M04	**1**	0.14376	0.02984	4.82	<.0001
y2019M05	y2019M05	**1**	0.13672	0.03028	4.52	<.0001
y2019M06	y2019M06	**1**	0.15435	0.03219	4.79	<.0001
y2019M07	y2019M07	**1**	0.12441	0.03154	3.94	<.0001
y2019M08	y2019M08	**1**	0.14728	0.03260	4.52	<.0001
y2019M09	y2019M09	**1**	0.14257	0.03290	4.33	<.0001

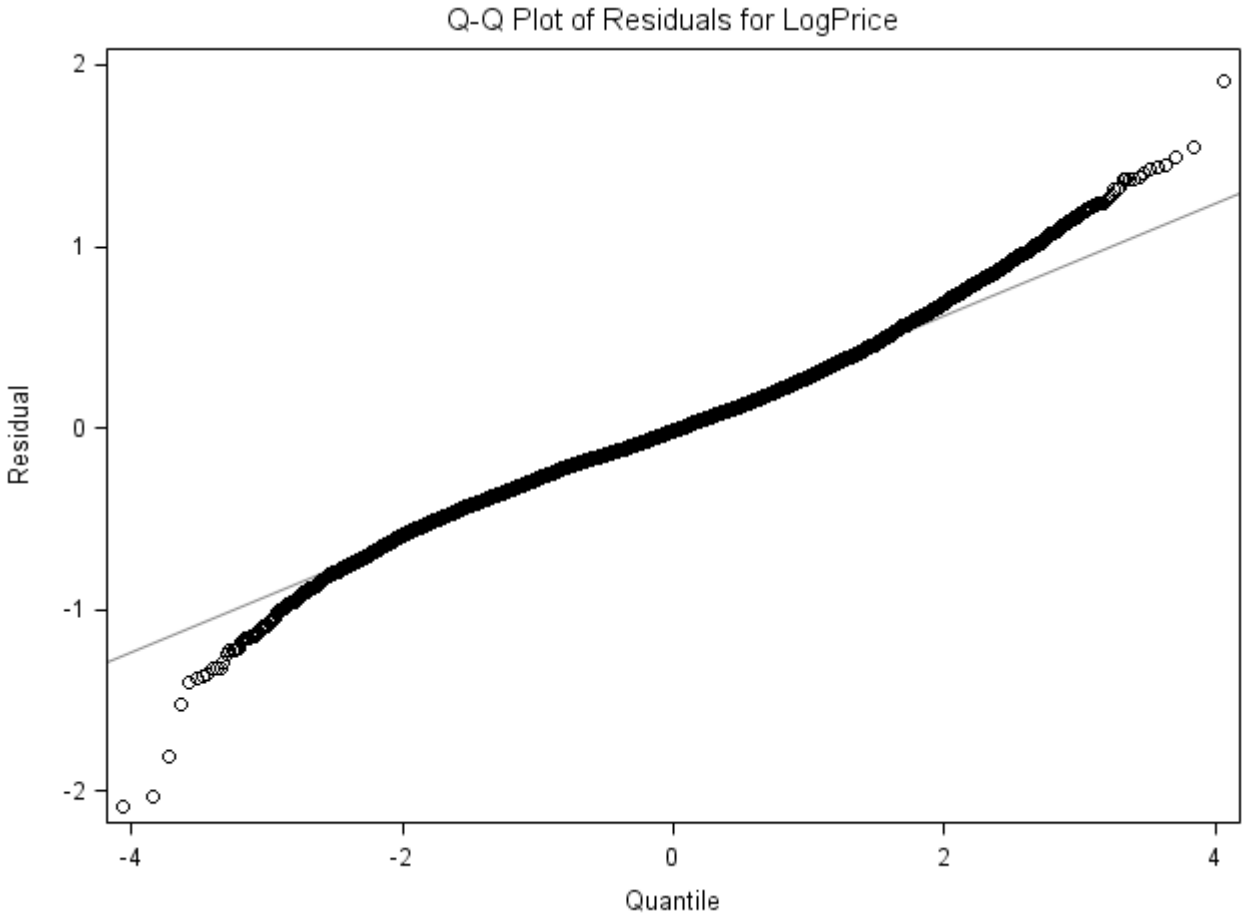
Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2019M10	y2019M10	**1**	0.10014	0.03157	3.17	0.0015
y2019M11	y2019M11	**1**	0.15219	0.03264	4.66	<.0001
y2019M12	y2019M12	**1**	0.12253	0.03210	3.82	0.0001
y2020M01	y2020M01	**1**	0.16902	0.03080	5.49	<.0001
y2020M02	y2020M02	**1**	0.16382	0.03245	5.05	<.0001
y2020M03	y2020M03	**1**	0.15042	0.03397	4.43	<.0001
y2020M04	y2020M04	**1**	0.19094	0.03807	5.02	<.0001
y2020M05	y2020M05	**1**	0.12949	0.03592	3.61	0.0003
y2020M06	y2020M06	**1**	0.13993	0.03213	4.36	<.0001
y2020M07	y2020M07	**1**	0.14432	0.02812	5.13	<.0001
y2020M08	y2020M08	**1**	0.13827	0.03171	4.36	<.0001
y2020M09	y2020M09	**1**	0.15558	0.03153	4.93	<.0001
y2020M10	y2020M10	**1**	0.15346	0.03077	4.99	<.0001

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2020M11	y2020M11	**1**	0.12983	0.03139	4.14	<.0001
y2020M12	y2020M12	**1**	0.18979	0.03135	6.05	<.0001
y2021M01	y2021M01	**1**	0.18617	0.02983	6.24	<.0001
y2021M02	y2021M02	**1**	0.16860	0.02960	5.70	<.0001
y2021M03	y2021M03	**1**	0.19278	0.02995	6.44	<.0001
y2021M04	y2021M04	**1**	0.20754	0.02844	7.30	<.0001
y2021M05	y2021M05	**1**	0.21123	0.02849	7.41	<.0001
y2021M06	y2021M06	**1**	0.19501	0.02978	6.55	<.0001
y2021M07	y2021M07	**1**	0.23143	0.02875	8.05	<.0001
y2021M08	y2021M08	**1**	0.25910	0.03127	8.29	<.0001
y2021M09	y2021M09	**1**	0.23982	0.02874	8.34	<.0001
y2021M10	y2021M10	**1**	0.26802	0.02819	9.51	<.0001
y2021M11	y2021M11	**1**	0.29408	0.02857	10.29	<.0001

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2021M12	y2021M12	**1**	0.30673	0.02928	10.48	<.0001
y2022M01	y2022M01	**1**	0.30208	0.02844	10.62	<.0001
y2022M02	y2022M02	**1**	0.31593	0.02752	11.48	<.0001
y2022M03	y2022M03	**1**	0.31745	0.02758	11.51	<.0001
y2022M04	y2022M04	**1**	0.34353	0.02755	12.47	<.0001
y2022M05	y2022M05	**1**	0.33371	0.02725	12.24	<.0001
y2022M06	y2022M06	**1**	0.36253	0.02730	13.28	<.0001


Distribution of Residuals for LogPrice
Normal
Kernel
Percent
15.0
12.5
10.0
7.5
5.0
2.5
0.0
-2.2
-1.9
-1.6
-1.3
-1
-0.7
-0.4
-0.1
0.2
0.5
0.8
1.1
1.4
1.7
2
Residual


Observed by Predicted for LogPrice
LogPrice
14
12
10
8
8
10
12
14
Predicted Value


Q-Q Plot of Residuals for LogPrice
Residual
Quantile
2
1
0
-1
-2
-4
-2
0
2
4

MODELI PER CMIMET NE SHKALLE VENDI (MUJORE)

The REG Procedure

Model: MODEL1

Dependent Variable: LogPrice LogPrice

Number of Observations Read	30467
Number of Observations Used	30467

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	71	6153.62591	86.67079	679.97	<.0001
Error	30395	3874.20468	0.12746		
Corrected Total	30466	10028			

Root MSE	0.35702	**R-Square**	0.6137
Dependent Mean	11.33796	**Adj R-Sq**	0.6128
Coeff Var	3.14887		

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Intercept	Intercept	**1**	8.37292	0.03404	245.97	<.0001

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Surface0I	Surface0I	**1**	-0.00629	0.00011751	-53.54	<.0001
SqRtSurface	SqRtSurface	**1**	0.34005	0.00330	102.94	<.0001
ObjektPrivat	ObjektPrivat	**1**	-0.22173	0.01109	-19.99	<.0001
Furnished	Furnished	**1**	0.04879	0.00441	11.07	<.0001
NewProperty	NewProperty	**1**	0.02291	0.00440	5.20	<.0001
StudioApartment	StudioApartment	**1**	-0.13961	0.01876	-7.44	<.0001
y2017M02	y2017M02	**1**	0.02393	0.03718	0.64	0.5199
y2017M03	y2017M03	**1**	-0.01980	0.03922	-0.50	0.6136
y2017M04	y2017M04	**1**	0.02826	0.03694	0.76	0.4444
y2017M05	y2017M05	**1**	0.07048	0.03552	1.98	0.0472
y2017M06	y2017M06	**1**	0.02801	0.03334	0.84	0.4008
y2017M07	y2017M07	**1**	0.04473	0.03226	1.39	0.1655
y2017M08	y2017M08	**1**	0.04271	0.03379	1.26	0.2062

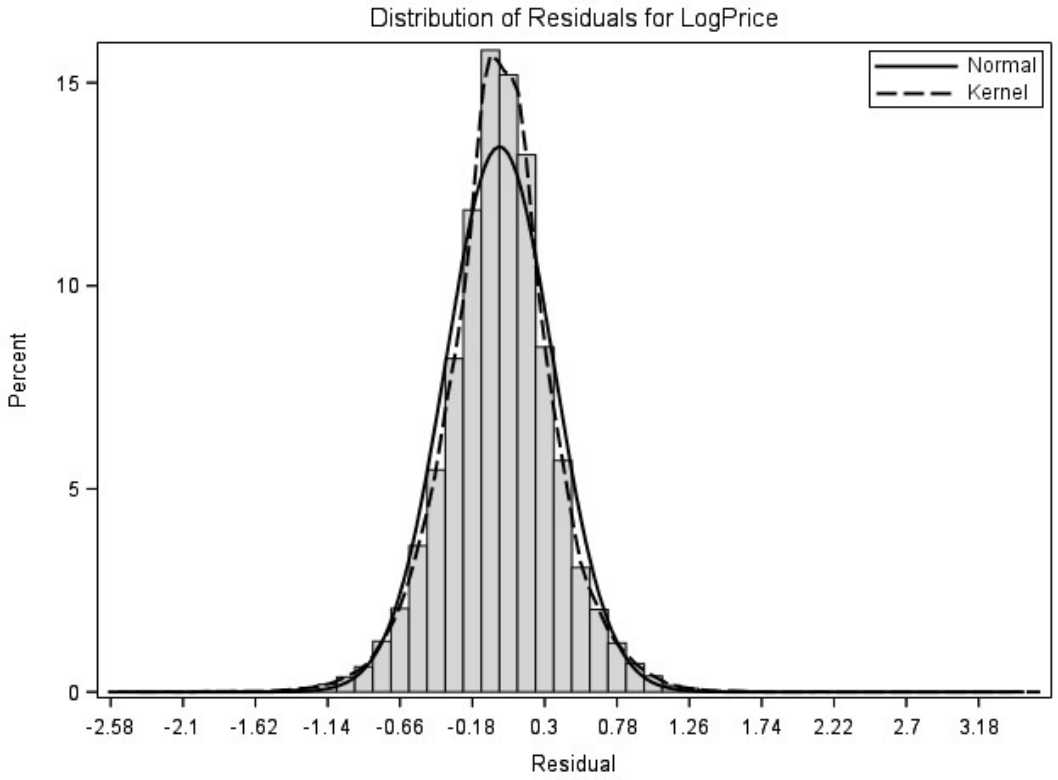
Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2017M09	y2017M09	**1**	0.04556	0.03525	1.29	0.1961
y2017M10	y2017M10	**1**	0.01162	0.03614	0.32	0.7479
y2017M11	y2017M11	**1**	0.08518	0.03488	2.44	0.0146
y2017M12	y2017M12	**1**	0.04641	0.03979	1.17	0.2436
y2018M01	y2018M01	**1**	0.16670	0.03476	4.80	<.0001
y2018M02	y2018M02	**1**	0.07435	0.03659	2.03	0.0422
y2018M03	y2018M03	**1**	0.06299	0.03397	1.85	0.0637
y2018M04	y2018M04	**1**	0.05823	0.03351	1.74	0.0822
y2018M05	y2018M05	**1**	0.05595	0.03380	1.66	0.0979
y2018M06	y2018M06	**1**	0.07472	0.03562	2.10	0.0360
y2018M07	y2018M07	**1**	0.03743	0.03831	0.98	0.3286
y2018M08	y2018M08	**1**	0.02364	0.03654	0.65	0.5178
y2018M09	y2018M09	**1**	0.11723	0.03422	3.43	0.0006

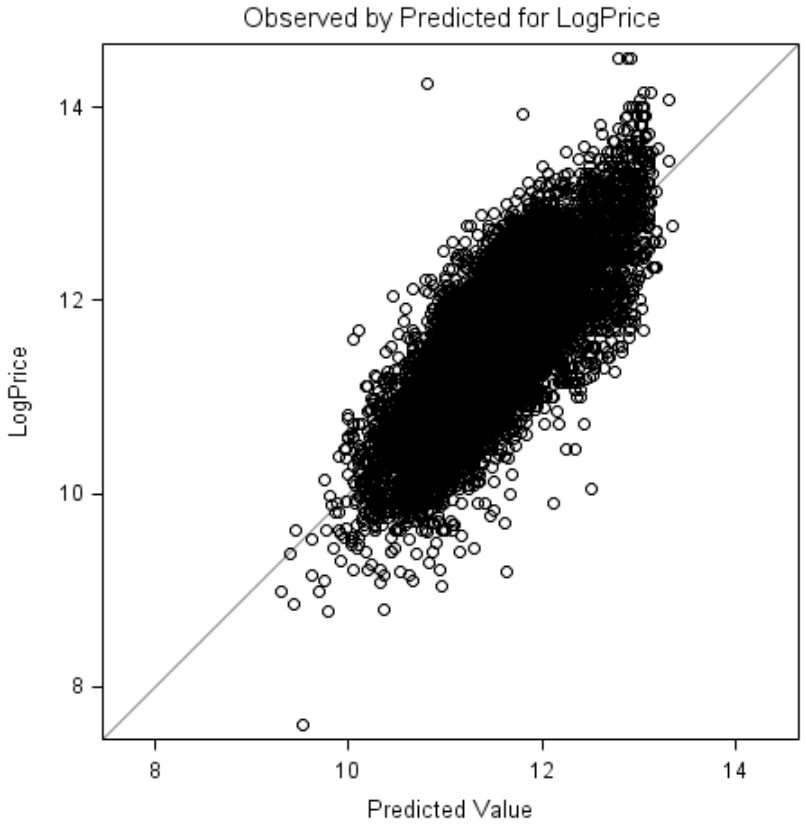
Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2018M10	y2018M10	**1**	0.16673	0.03356	4.97	<.0001
y2018M11	y2018M11	**1**	0.17030	0.03303	5.16	<.0001
y2018M12	y2018M12	**1**	0.19274	0.03363	5.73	<.0001
y2019M01	y2019M01	**1**	0.17574	0.03425	5.13	<.0001
y2019M02	y2019M02	**1**	0.11649	0.03248	3.59	0.0003
y2019M03	y2019M03	**1**	0.15644	0.03228	4.85	<.0001
y2019M04	y2019M04	**1**	0.19160	0.03121	6.14	<.0001
y2019M05	y2019M05	**1**	0.18030	0.03141	5.74	<.0001
y2019M06	y2019M06	**1**	0.15866	0.03340	4.75	<.0001
y2019M07	y2019M07	**1**	0.16336	0.03246	5.03	<.0001
y2019M08	y2019M08	**1**	0.13148	0.03340	3.94	<.0001
y2019M09	y2019M09	**1**	0.11596	0.03401	3.41	0.0007
y2019M10	y2019M10	**1**	0.11524	0.03282	3.51	0.0004

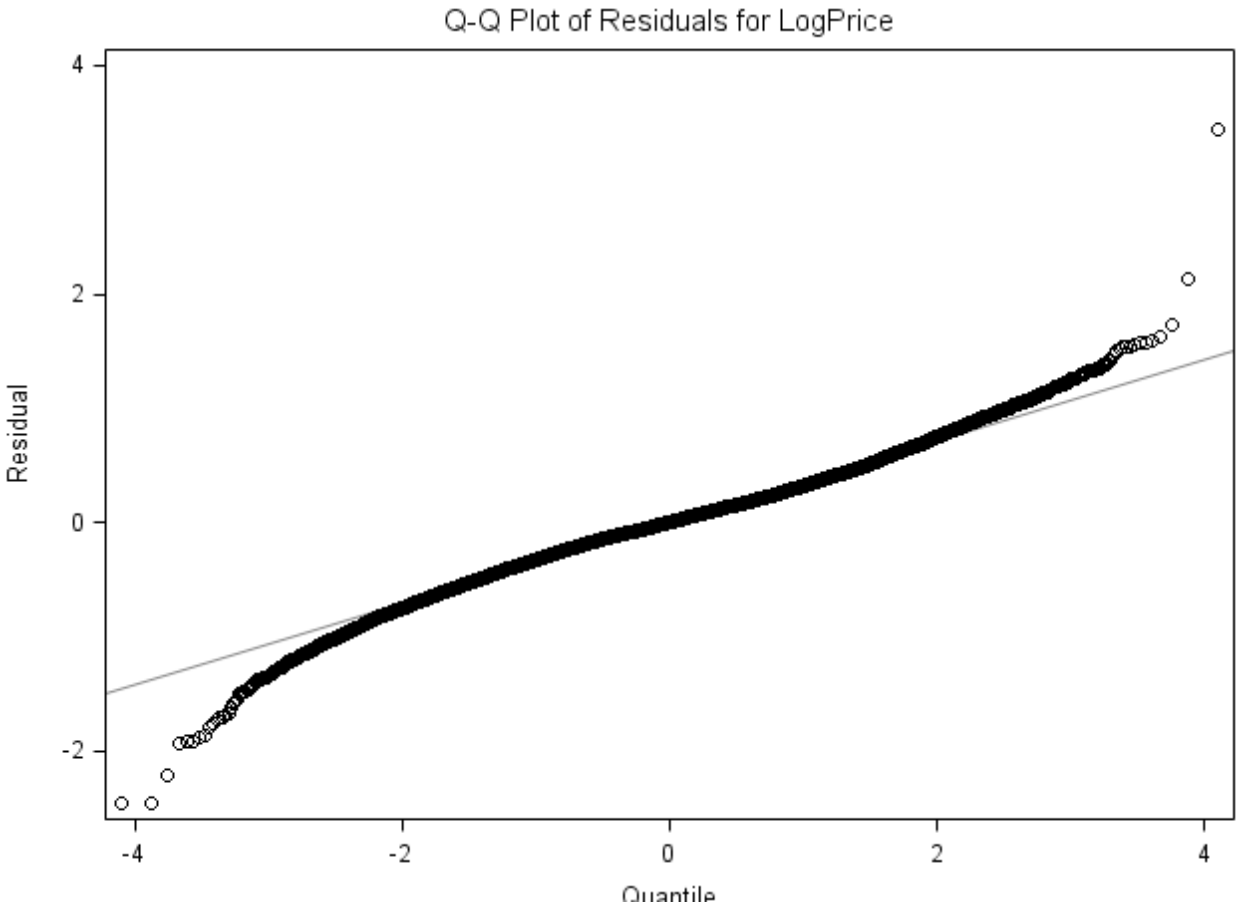
Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2019M11	y2019M11	**1**	0.16264	0.03392	4.80	<.0001
y2019M12	y2019M12	**1**	0.14004	0.03340	4.19	<.0001
y2020M01	y2020M01	**1**	0.21011	0.03237	6.49	<.0001
y2020M02	y2020M02	**1**	0.21973	0.03423	6.42	<.0001
y2020M03	y2020M03	**1**	0.20322	0.03610	5.63	<.0001
y2020M04	y2020M04	**1**	0.23876	0.04105	5.82	<.0001
y2020M05	y2020M05	**1**	0.15109	0.03617	4.18	<.0001
y2020M06	y2020M06	**1**	0.17525	0.03357	5.22	<.0001
y2020M07	y2020M07	**1**	0.17599	0.02893	6.08	<.0001
y2020M08	y2020M08	**1**	0.09741	0.03253	2.99	0.0028
y2020M09	y2020M09	**1**	0.14449	0.03251	4.44	<.0001
y2020M10	y2020M10	**1**	0.17654	0.03177	5.56	<.0001
y2020M11	y2020M11	**1**	0.16255	0.03263	4.98	<.0001

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2020M12	y2020M12	**1**	0.22513	0.03273	6.88	<.0001
y2021M01	y2021M01	**1**	0.20931	0.03095	6.76	<.0001
y2021M02	y2021M02	**1**	0.21134	0.03086	6.85	<.0001
y2021M03	y2021M03	**1**	0.22679	0.03094	7.33	<.0001
y2021M04	y2021M04	**1**	0.23567	0.02930	8.04	<.0001
y2021M05	y2021M05	**1**	0.17703	0.02901	6.10	<.0001
y2021M06	y2021M06	**1**	0.24847	0.03109	7.99	<.0001
y2021M07	y2021M07	**1**	0.27233	0.02970	9.17	<.0001
y2021M08	y2021M08	**1**	0.24975	0.03179	7.86	<.0001
y2021M09	y2021M09	**1**	0.28510	0.02977	9.58	<.0001
y2021M10	y2021M10	**1**	0.30149	0.02912	10.35	<.0001
y2021M11	y2021M11	**1**	0.34273	0.02961	11.57	<.0001
y2021M12	y2021M12	**1**	0.33362	0.03032	11.00	<.0001

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2022M01	y2022M01	**1**	0.31022	0.02924	10.61	<.0001
y2022M02	y2022M02	**1**	0.35044	0.02830	12.38	<.0001
y2022M03	y2022M03	**1**	0.33039	0.02830	11.67	<.0001
y2022M04	y2022M04	**1**	0.36089	0.02826	12.77	<.0001
y2022M05	y2022M05	**1**	0.34978	0.02791	12.53	<.0001
y2022M06	y2022M06	**1**	0.36770	0.02791	13.17	<.0001


Distribution of Residuals for LogPrice
Normal
Kernel
Percent
15
10
5
0
-2.58
-2.1
-1.62
-1.14
-0.66
-0.18
0.3
0.78
1.26
1.74
2.22
2.7
3.18
Residual


Observed by Predicted for LogPrice
LogPrice
14
12
10
8
8
10
12
14
Predicted Value


Q-Q Plot of Residuals for LogPrice
Residual
Quantile
4
2
0
-2
-4
-2
0
2
4

MODELI PER CMIMET NE TIRANE (TREMUJORE)

The REG Procedure

Model: MODEL1

Dependent Variable: LogPrice LogPrice

Number of Observations Read	25814
Number of Observations Used	25814

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	27	4496.89930	166.55183	1746.87	<.0001
Error	25786	2458.51343	0.09534		
Corrected Total	25813	6955.41274			

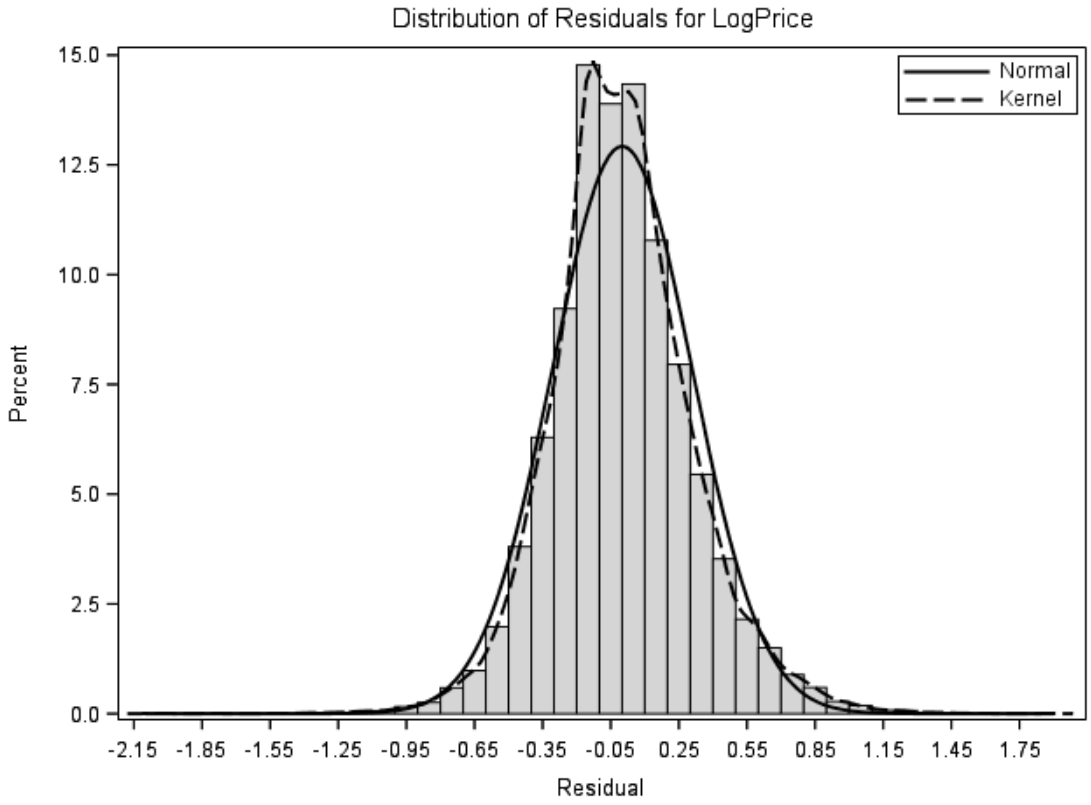
Root MSE	0.30878	**R-Square**	0.6465
Dependent Mean	11.38730	**Adj R-Sq**	0.6462
Coeff Var	2.71159		

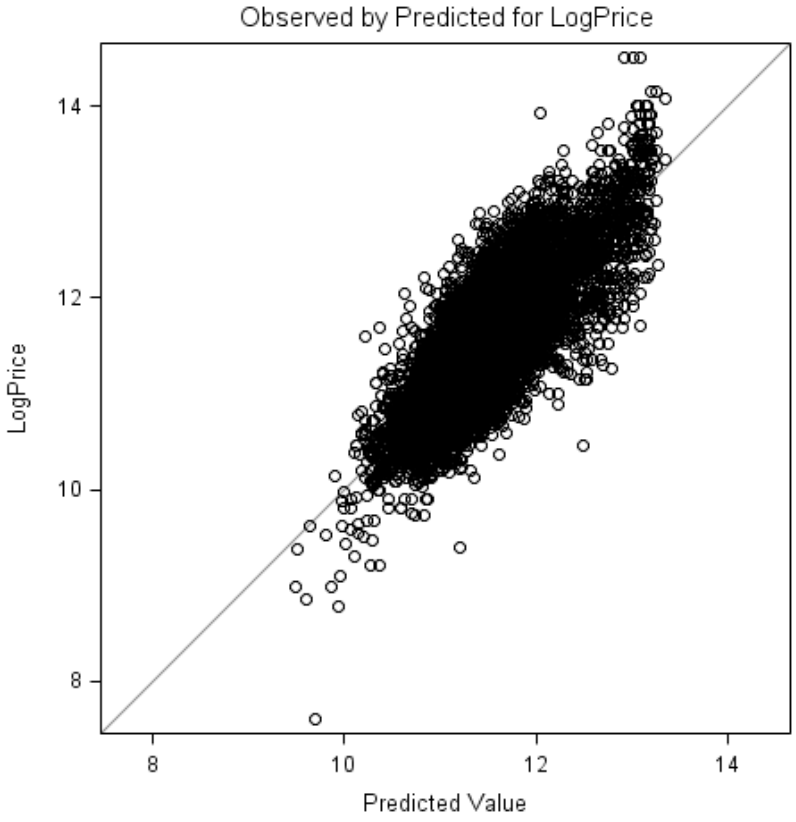
Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Intercept	Intercept	**1**	8.49029	0.02738	310.10	<.0001

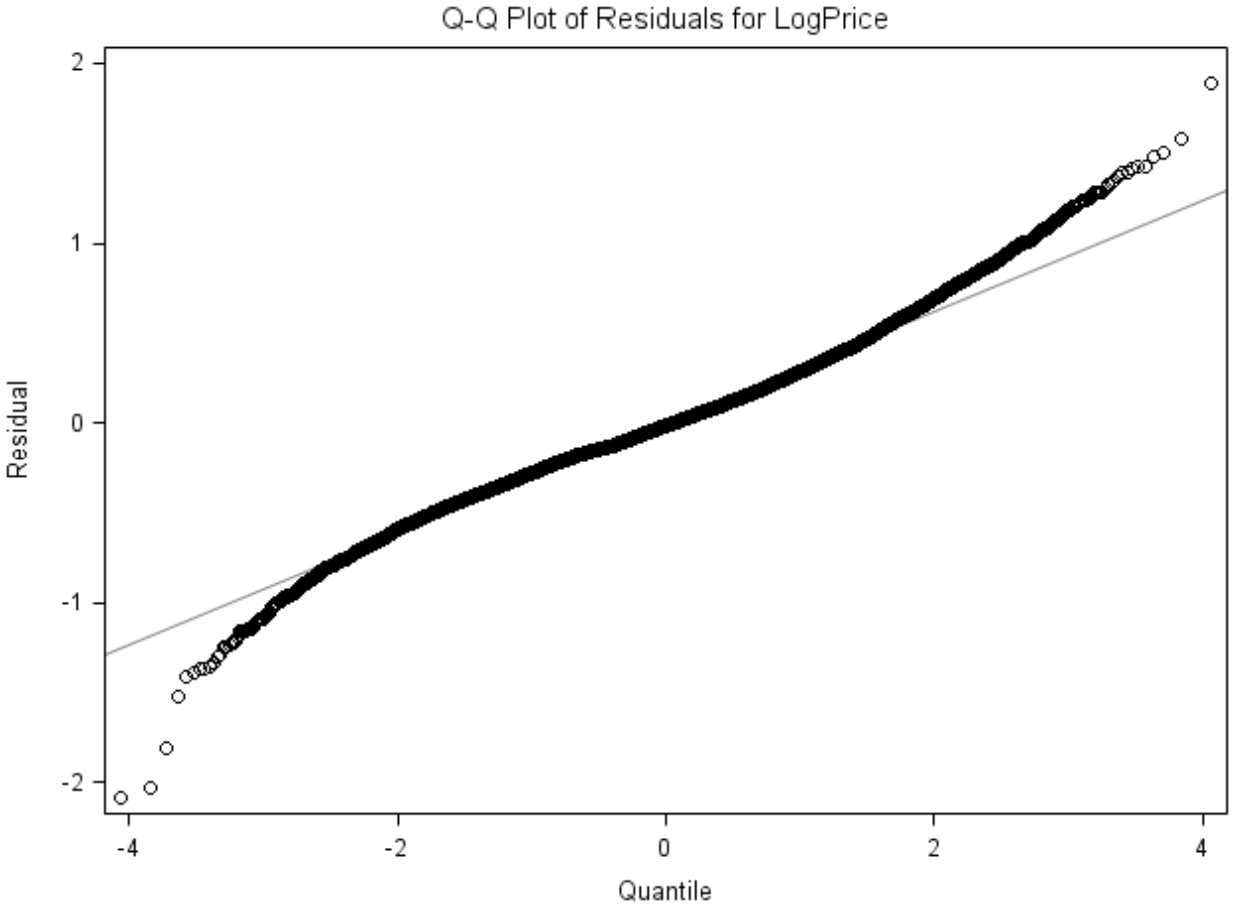
Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Surface0I	Surface0I	**1**	-0.00622	0.00013688	-45.44	<.0001
SqRtSurface	SqRtSurface	**1**	0.33521	0.00357	93.86	<.0001
ObjektPrivat	ObjektPrivat	**1**	-0.09435	0.01397	-6.75	<.0001
Furnished	Furnished	**1**	0.05614	0.00415	13.52	<.0001
NewProperty	NewProperty	**1**	-0.00174	0.00407	-0.43	0.6684
StudioApartment	StudioApartment	**1**	-0.04344	0.01916	-2.27	0.0234
y2017Q2	y2017Q2	**1**	0.03914	0.02033	1.93	0.0542
y2017Q3	y2017Q3	**1**	0.02527	0.01938	1.30	0.1923
y2017Q4	y2017Q4	**1**	0.06801	0.02135	3.19	0.0014
y2018Q1	y2018Q1	**1**	0.12754	0.02048	6.23	<.0001
y2018Q2	y2018Q2	**1**	0.05157	0.01985	2.60	0.0094
y2018Q3	y2018Q3	**1**	0.06643	0.02089	3.18	0.0015
y2018Q4	y2018Q4	**1**	0.15502	0.01920	8.07	<.0001

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2019Q1	y2019Q1	**1**	0.11314	0.01887	6.00	<.0001
y2019Q2	y2019Q2	**1**	0.14500	0.01839	7.88	<.0001
y2019Q3	y2019Q3	**1**	0.13835	0.01934	7.15	<.0001
y2019Q4	y2019Q4	**1**	0.12455	0.01922	6.48	<.0001
y2020Q1	y2020Q1	**1**	0.16402	0.01925	8.52	<.0001
y2020Q2	y2020Q2	**1**	0.14977	0.02065	7.25	<.0001
y2020Q3	y2020Q3	**1**	0.14673	0.01786	8.21	<.0001
y2020Q4	y2020Q4	**1**	0.15885	0.01871	8.49	<.0001
y2021Q1	y2021Q1	**1**	0.18330	0.01796	10.21	<.0001
y2021Q2	y2021Q2	**1**	0.20715	0.01740	11.90	<.0001
y2021Q3	y2021Q3	**1**	0.24156	0.01766	13.67	<.0001
y2021Q4	y2021Q4	**1**	0.28822	0.01731	16.65	<.0001
y2022Q1	y2022Q1	**1**	0.31441	0.01684	18.67	<.0001

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2022Q2	y2022Q2	**1**	0.34781	0.01661	20.94	<.0001




Observed by Predicted for LogPrice
LogPrice
Predicted Value
14
12
10
8
8
10
12
14


Q-Q Plot of Residuals for LogPrice
Residual
Quantile
2
1
0
-1
-2
-4
-2
0
2
4

MODELI PER CMIMET NE BREGDET (TREMUJORE)

The REG Procedure

Model: MODEL1

Dependent Variable: LogPrice LogPrice

Number of Observations Read	2600
Number of Observations Used	2600

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	27	939.14665	34.78321	211.51	<.0001
Error	2572	422.96410	0.16445		
Corrected Total	2599	1362.11074			

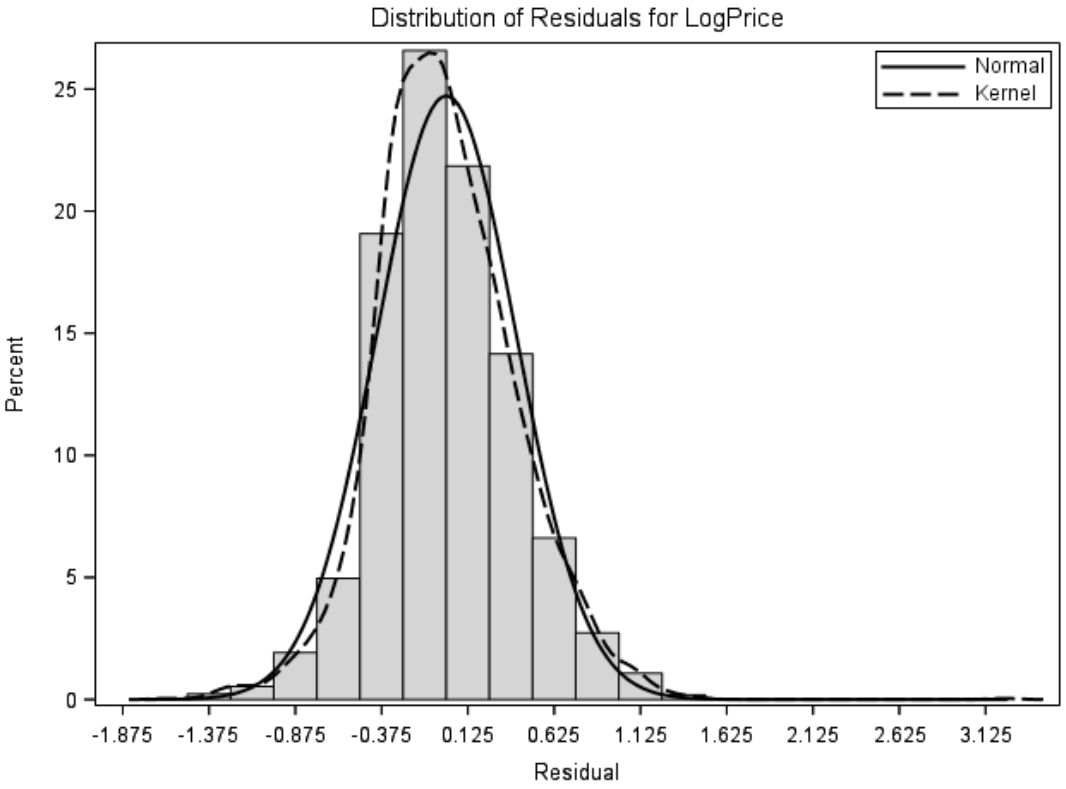
Root MSE	0.40552	**R-Square**	0.6895
Dependent Mean	11.06870	**Adj R-Sq**	0.6862
Coeff Var	3.66370		

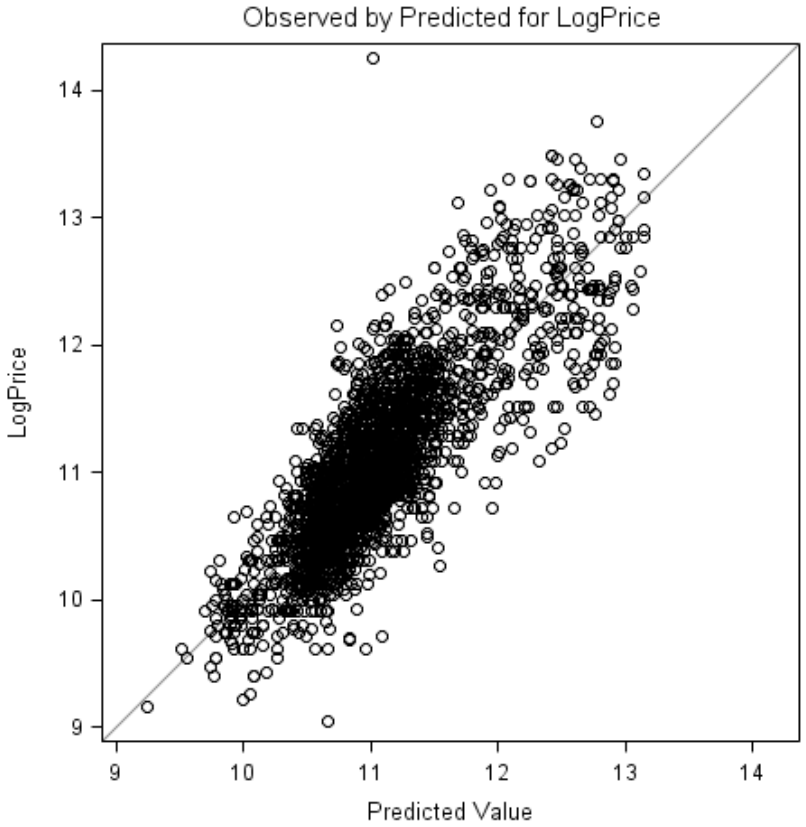
Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Intercept	Intercept	**1**	8.33024	0.07871	105.83	<.0001

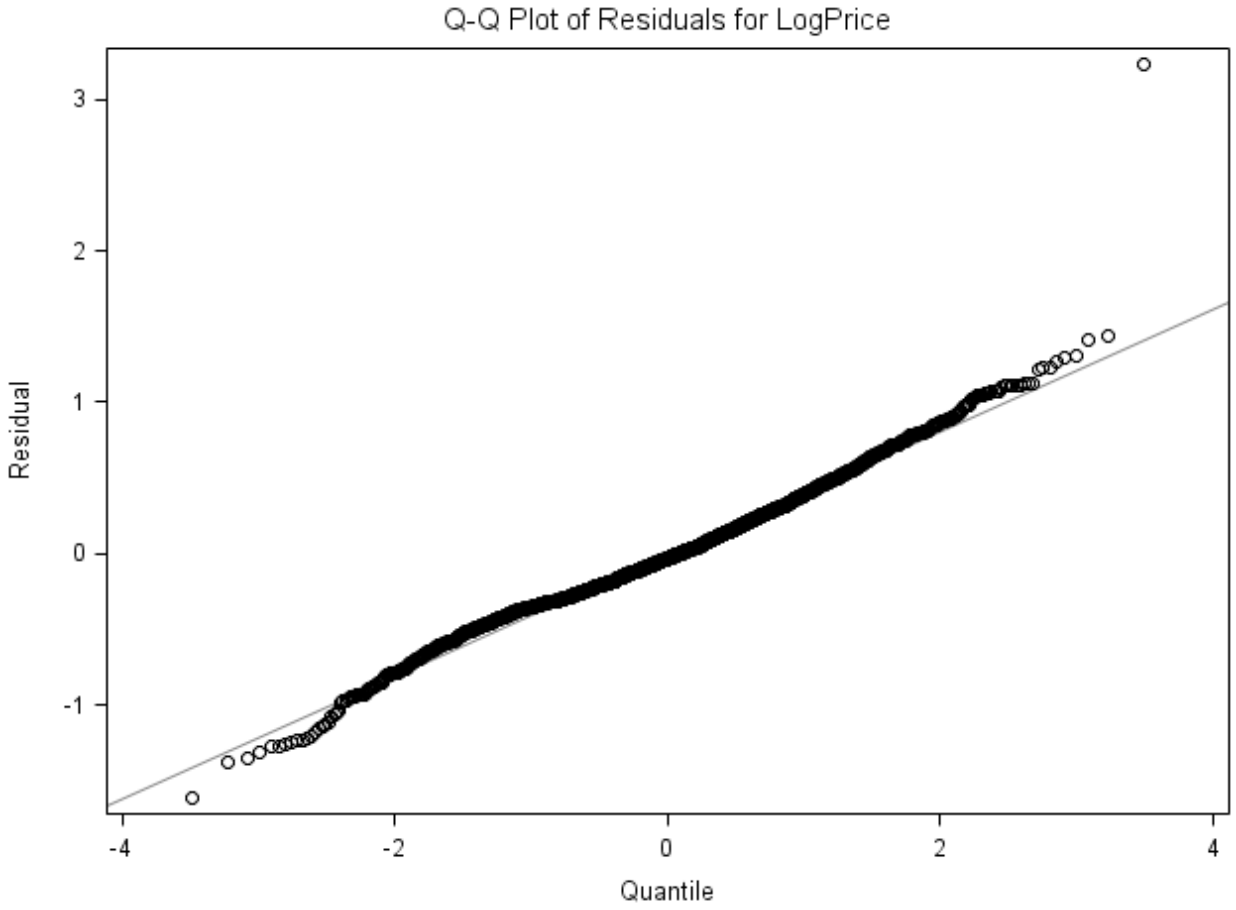
Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Surface0I	Surface0I	**1**	-0.00564	0.00028335	-19.90	<.0001
SqRtSurface	SqRtSurface	**1**	0.31405	0.00931	33.74	<.0001
ObjektPrivat	ObjektPrivat	**1**	0.09645	0.03134	3.08	0.0021
Furnished	Furnished	**1**	0.04175	0.01652	2.53	0.0115
NewProperty	NewProperty	**1**	-0.01957	0.01799	-1.09	0.2767
StudioApartment	StudioApartment	**1**	-0.27705	0.04441	-6.24	<.0001
y2017Q2	y2017Q2	**1**	-0.06604	0.06859	-0.96	0.3357
y2017Q3	y2017Q3	**1**	0.06269	0.06889	0.91	0.3629
y2017Q4	y2017Q4	**1**	0.04140	0.07432	0.56	0.5775
y2018Q1	y2018Q1	**1**	0.13432	0.06953	1.93	0.0535
y2018Q2	y2018Q2	**1**	0.06812	0.06949	0.98	0.3271
y2018Q3	y2018Q3	**1**	-0.01070	0.06344	-0.17	0.8661
y2018Q4	y2018Q4	**1**	0.09671	0.07167	1.35	0.1773

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2019Q1	y2019Q1	**1**	0.06444	0.07433	0.87	0.3860
y2019Q2	y2019Q2	**1**	0.11358	0.06859	1.66	0.0979
y2019Q3	y2019Q3	**1**	0.11585	0.06197	1.87	0.0617
y2019Q4	y2019Q4	**1**	-0.01352	0.07883	-0.17	0.8639
y2020Q1	y2020Q1	**1**	0.27475	0.09869	2.78	0.0054
y2020Q2	y2020Q2	**1**	0.17220	0.06422	2.68	0.0074
y2020Q3	y2020Q3	**1**	0.04326	0.05435	0.80	0.4261
y2020Q4	y2020Q4	**1**	0.10499	0.06272	1.67	0.0943
y2021Q1	y2021Q1	**1**	0.20848	0.06085	3.43	0.0006
y2021Q2	y2021Q2	**1**	0.24386	0.05435	4.49	<.0001
y2021Q3	y2021Q3	**1**	0.27977	0.05817	4.81	<.0001
y2021Q4	y2021Q4	**1**	0.27492	0.05669	4.85	<.0001
y2022Q1	y2022Q1	**1**	0.25417	0.05087	5.00	<.0001

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2022Q2	y2022Q2	**1**	0.35472	0.04896	7.25	<.0001




Observed by Predicted for LogPrice
LogPrice
Predicted Value
14
13
12
11
10
9
9
10
11
12
13
14


Q-Q Plot of Residuals for LogPrice
Residual
Quantile
3
2
1
0
-1
-4
-2
0
2
4

MODELI PER CMIMET NE ZONAT QENDRORE TE VENDIT (TREMUJORE)

The REG Procedure

Model: MODEL1

Dependent Variable: LogPrice LogPrice

Number of Observations Read	2053
Number of Observations Used	2053

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	27	934.55634	34.61320	192.51	<.0001
Error	2025	364.09592	0.17980		
Corrected Total	2052	1298.65226			

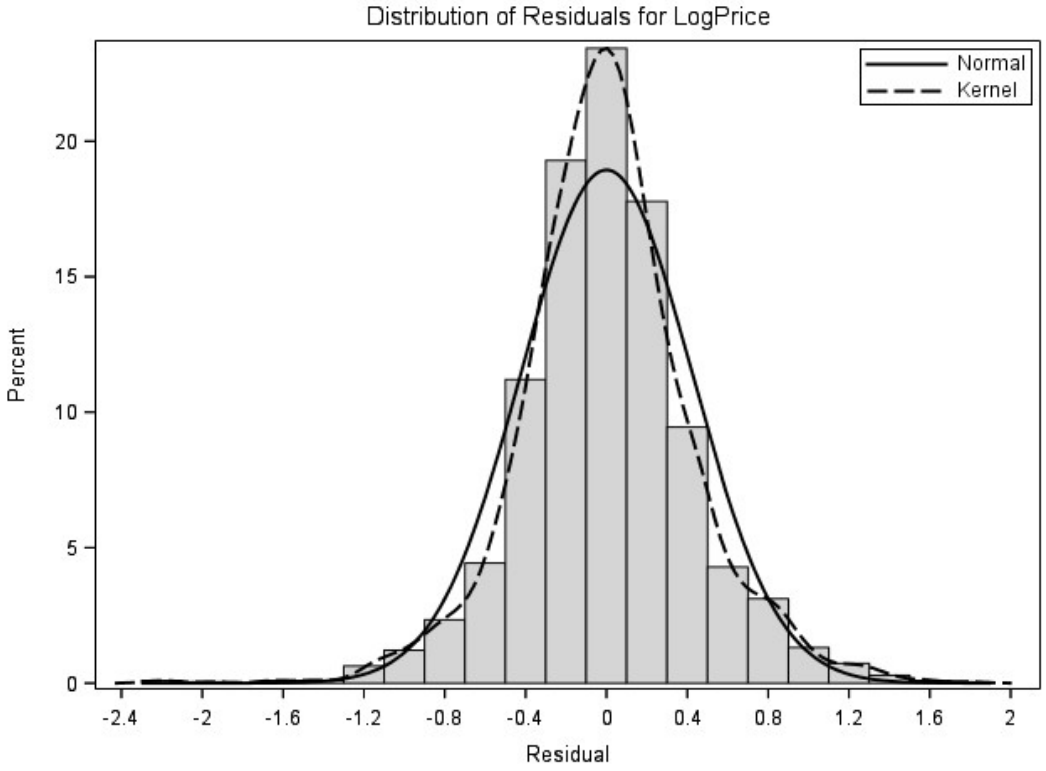
Root MSE	0.42403	**R-Square**	0.7196
Dependent Mean	11.05853	**Adj R-Sq**	0.7159
Coeff Var	3.83441		

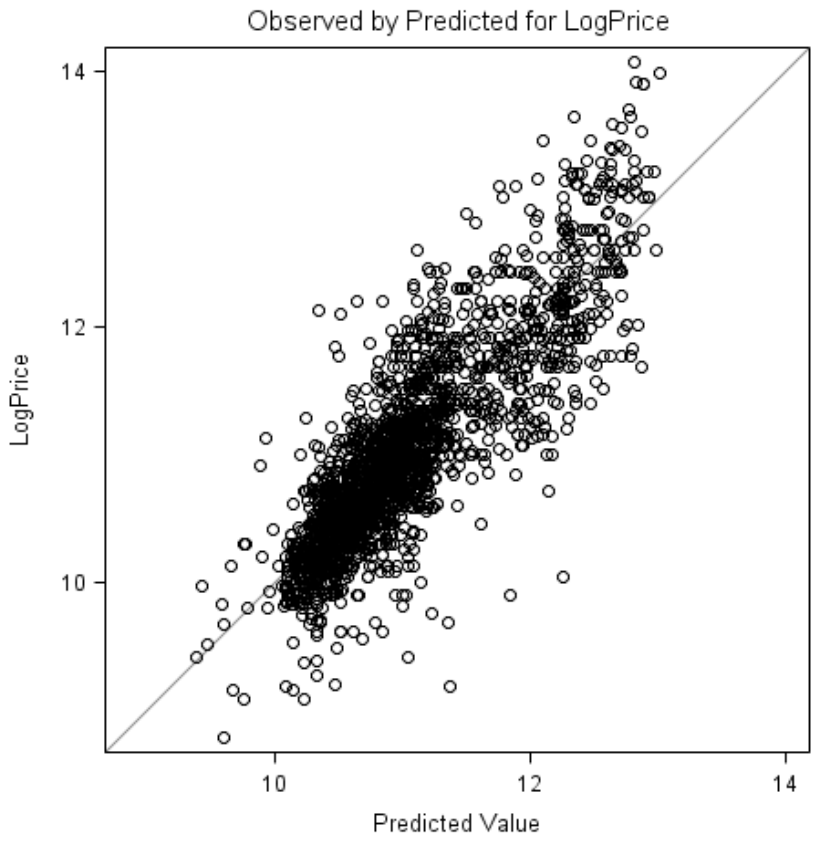
Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Intercept	Intercept	**1**	8.23669	0.10298	79.98	<.0001

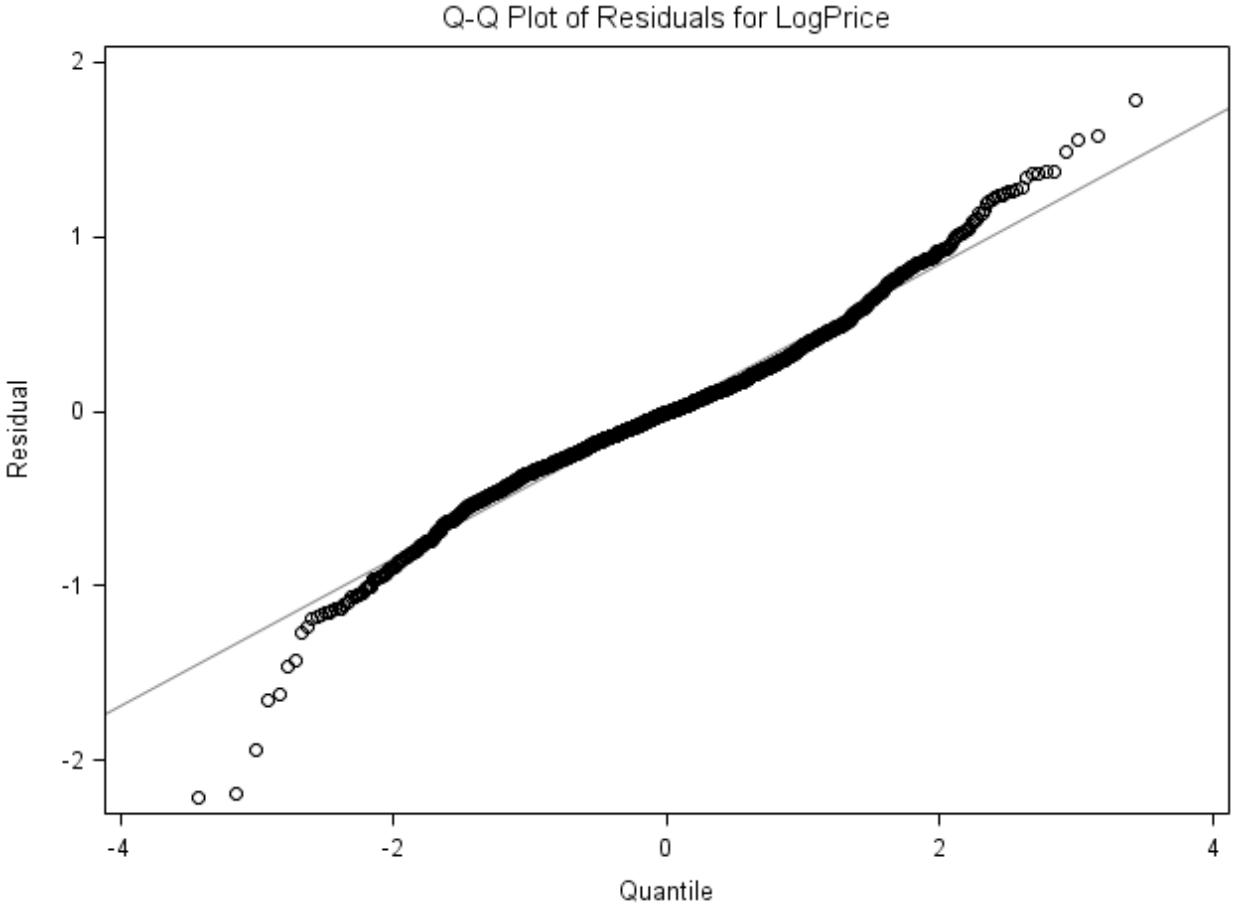
Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Surface0I	Surface0I	**1**	-0.00558	0.00041573	-13.41	<.0001
SqRtSurface	SqRtSurface	**1**	0.31897	0.01306	24.43	<.0001
ObjektPrivat	ObjektPrivat	**1**	0.02410	0.02839	0.85	0.3961
Furnished	Furnished	**1**	0.08368	0.02141	3.91	<.0001
NewProperty	NewProperty	**1**	0.03214	0.02580	1.25	0.2130
StudioApartment	StudioApartment	**1**	-0.31379	0.11665	-2.69	0.0072
y2017Q2	y2017Q2	**1**	-0.04547	0.07058	-0.64	0.5195
y2017Q3	y2017Q3	**1**	-0.16198	0.07132	-2.27	0.0232
y2017Q4	y2017Q4	**1**	-0.07977	0.06952	-1.15	0.2513
y2018Q1	y2018Q1	**1**	-0.11258	0.06686	-1.68	0.0924
y2018Q2	y2018Q2	**1**	-0.04569	0.06928	-0.66	0.5097
y2018Q3	y2018Q3	**1**	-0.12941	0.08403	-1.54	0.1237
y2018Q4	y2018Q4	**1**	-0.09734	0.07481	-1.30	0.1933

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2019Q1	y2019Q1	**1**	-0.13368	0.07914	-1.69	0.0914
y2019Q2	y2019Q2	**1**	-0.06275	0.07384	-0.85	0.3956
y2019Q3	y2019Q3	**1**	-0.10532	0.07060	-1.49	0.1359
y2019Q4	y2019Q4	**1**	-0.02104	0.06979	-0.30	0.7630
y2020Q1	y2020Q1	**1**	-0.07194	0.08881	-0.81	0.4180
y2020Q2	y2020Q2	**1**	-0.04061	0.11664	-0.35	0.7278
y2020Q3	y2020Q3	**1**	-0.12675	0.07300	-1.74	0.0827
y2020Q4	y2020Q4	**1**	0.06924	0.07595	0.91	0.3621
y2021Q1	y2021Q1	**1**	-0.01152	0.07428	-0.16	0.8768
y2021Q2	y2021Q2	**1**	-0.04426	0.06171	-0.72	0.4734
y2021Q3	y2021Q3	**1**	0.12104	0.06548	1.85	0.0647
y2021Q4	y2021Q4	**1**	-0.01150	0.07357	-0.16	0.8758
y2022Q1	y2022Q1	**1**	0.11073	0.06356	1.74	0.0816

Parameter Estimates						
Variable	**Label**	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
y2022Q2	y2022Q2	**1**	0.14483	0.05863	2.47	0.0136




Observed by Predicted for LogPrice
LogPrice
Predicted Value
14
12
10
10
12
14


Q-Q Plot of Residuals for LogPrice
Residual
Quantile
2
1
0
-1
-2
-4
-2
0
2
4